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NEXT MONTH

THE ANNIHILATOR COMES, by Ed Earl Repp. Yielding to the demands of our readers our popular author gives us now a sequel of his "Beyond Gravity." In this thrilling story, we get the further adventures of the great airship "Annihilator," and its brave commander, Bob Allison. Into the frozen north they go, to search for the missing explorers; and they encounter adventures and a terrible menace that man had never dreamed of. Incidently our author gives us a new view of the Arctic zones that is startling and revolutionary, yet has a good deal of authority for it.

COVER CONTEST. In this issue we will publish the first prize winner of the February, 1930, cover contest and if space permits, the second and third prize winners. We received over 400 manuscripts in this contest and the results were on the whole quite excellent.

WHOSE FLIGHT WAS THE MORE HAZARDOUS—LINDBERGH'S OR BYRD'S? The prize-winning letter as well as the general vote on this absorbing question will be published in this issue.

THE TORPEDO TERROR, by Edsel Newton. It has already been acknowledged that it is possible to send an airplane into the air and guide it by radio controls without the need of a pilot. The immense importance of this in a war in the air cannot be overestimated. For by means of radio controls it will be possible for a nation to send thousands upon thousands of planes laden with high explosives over the enemy lines. But "The Torpedo Terror" is not a war story, in fact it is the working out of a great mystery and the saving of the world from a terrible disaster.

THE BAT-MEN OF MARS, by Wood Jackson. The concluding instalment of this marvelous interplanetary story is by far the most exciting part. Our explorers from the earth are coming to grips with a strange civilization. Pitting their strength and ingenuity against the terrible super-strength of another race, they show through page after page of this swift-moving tale that when interplanetary travel comes we must be prepared to meet it, no matter how strange or mysterious.

AND OTHERS.

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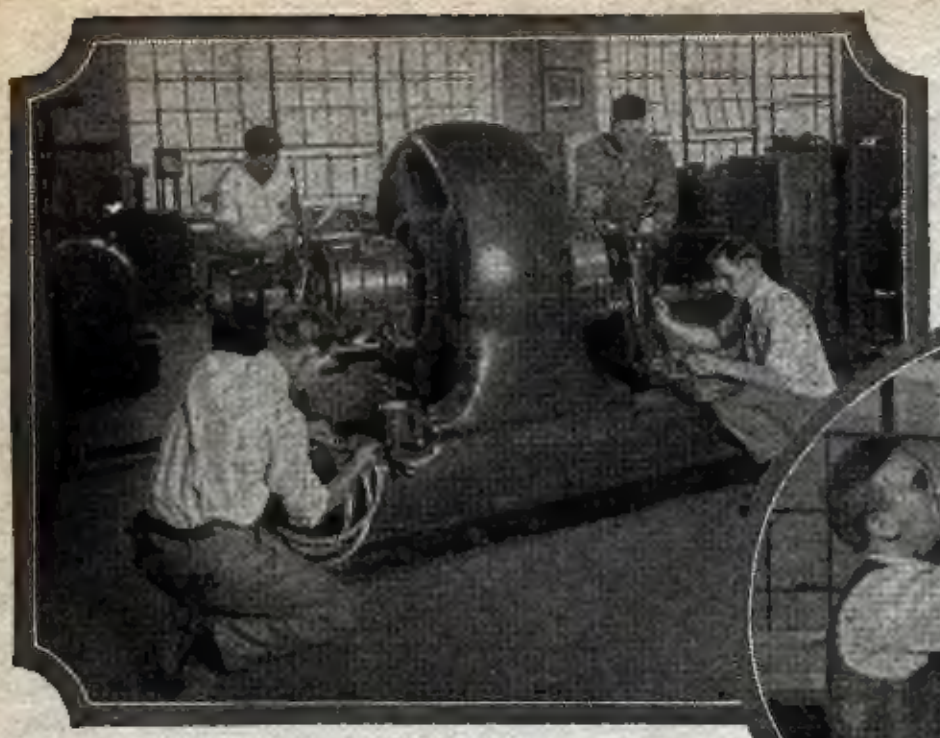

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VOLUME 1
No. 11

AIR WONDER STORIES

MAY
1930

The Future of Aviation Springs from the Imagination

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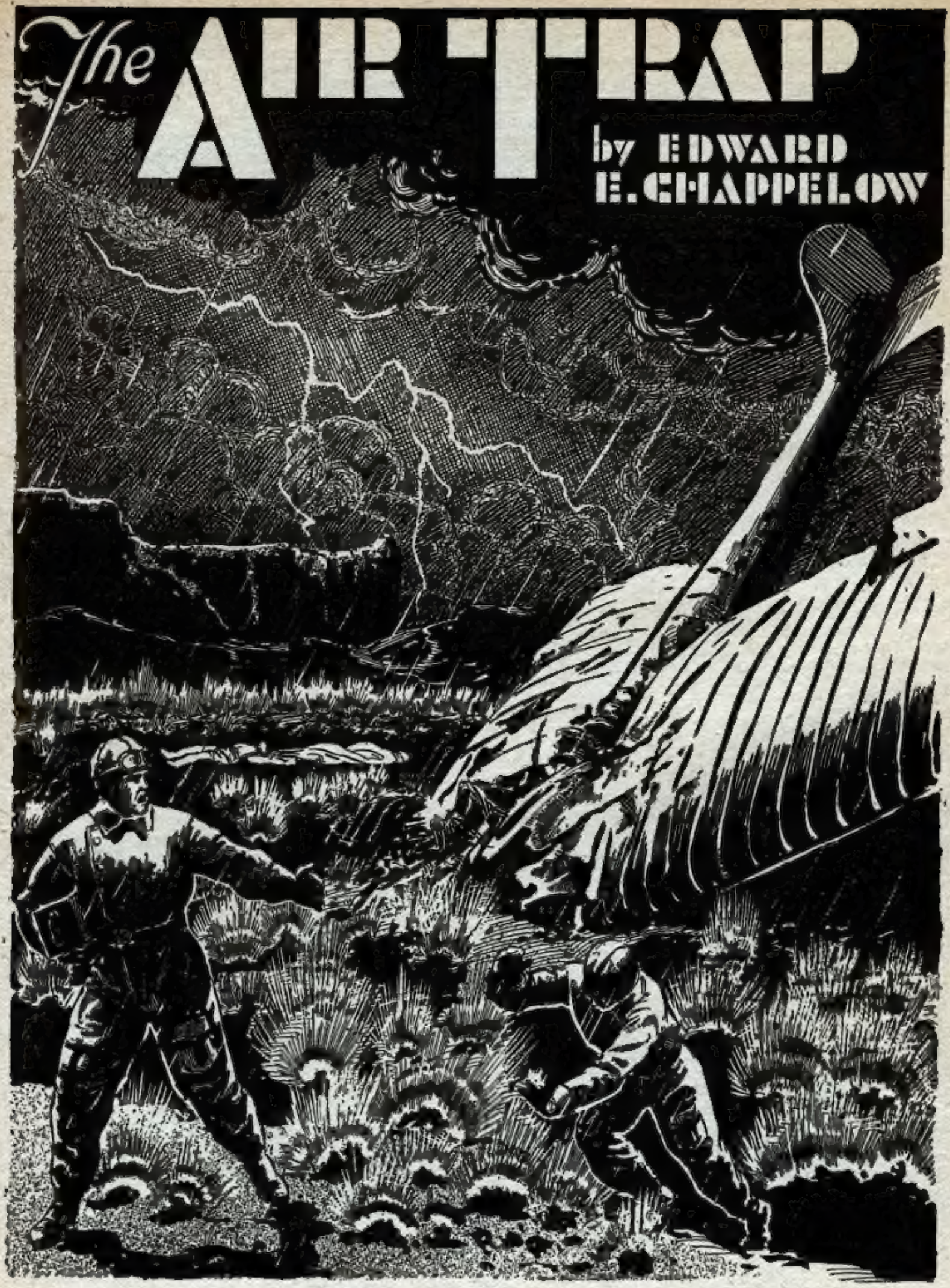
The AIR TRAP

by EDWARD E. CHAPPELOW



(Illustration by Paul)

Tom looked around in horror to his weakening companion. Thin tongues of fire were now leaping upward from every sharp point and edge of rock. Amber-colored flames shot up as high as three or four feet.

THE AIR TRAP

By the Author of "The Planet's Air Master," "In Two Worlds," etc.

IN the twilight of a tropical sunset, a giant Greyson mail plane stood poised before its hangar. Its rounded nose, flanked on each side by three great motors, was pointed to the west towards the miles of trackless jungle over which it would soon be soaring on the newly formed mail route to the coast—to Capetown.

"I've got a funny feeling in my bones," Jim Rogers, a young relief pilot at the Kimberly field, said to a second birdman, standing beside him. They were watching the huge silver bird warm up for the flight.

"I don't wonder at your funny feeling," returned Tom Curtiss, the second pilot, "after losing a ship last night and one a week ago."

"That's what comes of trying to hurry things along too fast," Jim spoke again. "We have a stretch of 500 miles of continuous jungle to fly over, and what have we for guidance? Where are our beacons, warning signs or landing fields? From here to the coast we haven't a single sign to guide us. Just blind flying all the way, and only two spots where a fellow can land, provided he is able to find them."

"The radio beam will keep you on the track, and it's going continuously during every trip," Curtiss answered.

"The radio beam my eye," exclaimed Rogers. "Did you hear what Weldon had to say about the radio guiding beam when he dropped in here with the mail last Tuesday evening? He followed the beam, depending upon it, and he was no more than 200 miles out when he lost it altogether. He flew miles off his route trying to pick it up, but it was over an hour before he struck it again. Even his compass stuck on him on that trip, and it was only by keeping certain mountain peaks and such land marks in view that he was able to keep from wandering farther off the route. Now where would Weldon have been if that trip of his had been at night instead of day—and storming at that? Weldon wouldn't have had one chance in ten of getting through. If he didn't crash into some mountain side he would have used up all his fuel trying to get through and find his way home. I'm telling you, Tom, I've no desire to stick around this vicinity at all. In the first place, I have no love for tropical flying. The air is about as tricky and treacherous right here as it could be anywhere.

"Take a look at that sunset over there, as red and as pretty as if you were viewing it through the Golden Gate at home. But nine chances out of ten there's either a cyclone or an all-electric thunderstorm skulking below that horizon. No sir, I've no confidence in this tropical atmosphere at all; the barometer has a habit of dropping too fast and too low."

"Well you're right in a way, Jim. It is a damn dangerous route for a mail line. Of course they're clearing up landing fields along the way now, and setting up beacons, but until they get the route lit up, they should send the ships around the other way."

"SURE they should. They should make a bee line for the coast and follow it down to Capetown. It's a darn sight safer and easier line to follow. But it means another hour or two in the air and that costs more, besides it slows down the service. They've lost more money in the two planes that have disappeared than they'll ever get by cutting the time down this way. Not to mention the four lives that probably were cut short when them planes crashed. I'm telling you Tom, it's madness to send planes out over such a run at night. Why man, the search parties haven't even found the wreckage of those other ships yet, and the one that came down a couple days after they opened up this line."

"What's the trouble?" asked Curtiss.

"It's due to this infernal atmosphere," Rogers said excitedly. "Why man, every fellow who has hopped this run will tell you that his radio receiver has gone bugs at times so that he couldn't hear a sound except a thunder of static. Then there's Weldon and Bradley; they'll both tell you that the guiding beam just simply ceased to exist although they knew that they were on the route. She just takes a notion to drop dead for a stretch of fifty miles, then comes back on the air again. Then again, how come so many of the fellows claim that their compass' stick on them at times? It's this tricky atmosphere that they have here if I know anything."

EDWARD E. CHAPPELOW

The roar of the battery of motors on the waiting plane now drew the attention of the two pilots, who silently watched the trim glittering ship start down the field and climb into the air, disappearing into the blazing red western sky.

"I've got a funny hunch that he's headed for trouble," Jim broke the silence, as the two commenced to walk toward the field office. "Too many of the boys have had trouble getting through in daylight to give me any faith in a night run."

Entering the office they approached the desk of Watson the airport chief.

"You look a bit worried, chief," Tom commented, as he noticed a slight frown on the other's face.

"I am. Those damn fools at Capetown insist upon keeping up the night schedule in the face of what's happened. I just sent Weldon on tonight's hop. The poor fellow was nervous, you could see it, but he never said a word. He's one of the best pilots we've got. That's why I sent him because if any man can get through then Weldon will."

"And what are they going to do about the situation?" asked Jim.

THE airplane has done one notable thing if no other—it has opened up to man vast areas of untraveled, unknown lands. And those aviators, who at the risk of their lives have charted the air lines over these vast deserts and jungles, have erected for themselves a reputation as the true pioneers of this century.

Many of them have met with experiences stranger than anything we can suspect; and unfortunately few have returned to tell us of them. But whatever any aviator might have seen or met, certainly nothing could have been stranger nor more exciting than the air trap our author writes of—the trap from which few escaped. Mr. Chappelow, as always, mixes a delightful blend of scientific truth with imagination, and the result is always a thrilling tale.

Weldon's Idea

"A GOVERNMENT ship flew the route yesterday and again last night, and reported nothing unusual. We now have four landing fields cleared along the route, one to every hundred flying miles, and yesterday they completed the setting up of searchlight stations at each field. The government ships report the route marked plain enough for safe flying, so that's as far as it goes. So far, I don't think either of the other ships have been found, although three planes of the Royal Air Force are going to start an aerial search in the morning.

"If Weldon doesn't get through

to-night, I'll close this base down until the mystery is cleared—orders or no orders. There's some sort of air trap on this run, and I'm going to find out just what it is."

"It won't be hard to close the field down if Weldon crashes," Jim replied, "for there won't be a man here that'll take a ship up until something's done."

"Well, I'm taking every safety measure I know of to help him through on this run. Do you hear that buzzer on the wall?"

Both pilots listened as the intermittent sounds of a buzzer came to their ears from the wall over the chief's desk. At intervals of two or three seconds the little metal box gave out a short clear note.

"That," Watson said, "is operated by radio signals received from a small automatic transmitter on Weldon's plane. As long as we hear these buzzes we'll know at least that he is all right."

"What good will that do?" Tom spoke up, "What we should have done was to trail him in another ship, and be nearby if he got into trouble."

"And lose two more planes instead of one."

"Not necessarily—"

"Listen, Tom, you have your ideas as to what is playing havoc on this line as well as I. Now I'm going to tell you fellows what my idea is, and my reasons for it."

"Shoot," was Jim's brief comment.

"Well, did you fellows ever hear of Skeleton Valley?"

"Sure," Jim again replied. "The line passes over it. It's a sort of cavern, as seen from the air, about a mile wide and around twenty or more long and plenty deep."

"And have you ever heard any rumors about the place?"

"There have been yarns around that the jungle natives won't go near the place on account of some sort of spirit devils that are supposed to live in the valley," offered Tom. "But you can't believe any native superstitions."

"As a rule, no. But in this case perhaps we can."

"What do you mean?"

"I mean that a place such as that valley, miles from the nearest white man and shunned by the natives, would be an excellent spot for a nest of air bandits."

"Great Scott!" exclaimed Jim. "Air bandits out here?"

"I had that idea too," Tom offered. "These ships are carrying some valuable mail including the diamond shipments and payrolls between these two fields. But I doubt if there could be much air gunning done without being seen by some natives, and in that case the news would soon reach the settlements."

"Yes, if they used guns; but suppose our air bandits were scientific enough to have a ray that could demagnetize or burn out the generators and electrical systems of the planes, then the ships would just naturally become paralyzed when they hit the beam, and glide down into the valley to crash against the rock walls or crumple up on the floor."

THE others remained silent as Watson paused in his talk, and for the space of a few minutes only the buzz-buzz of the little device on the wall broke the stillness. Then the chief continued:

"If a man really did invent a beam of such a nature and determined to keep his discovery a secret and use it criminally to his own personal benefit, then there could be no better place to try out such a device, with minimum chances of detection, than in Skeleton Valley."

"It sounds reasonable all right," Tom agreed, "As far as the possibilities of such being done in the valley. But," he added, "Any man inventing a beam like that would not be likely to use it in such a way. Why, he could sell the rights to such an invention for a good fortune."

"Yes, that's true, but some men having a criminal streak in them, would rather use their discovery the illegal way just for the excitement that it offers. Anyway, it seems to be the most reasonable explanation."

"It looks as though you've hit it, chief," Jim spoke up. "Everything points that way. Your idea would help explain why the boys have so many electrical troubles. Take Weldon for instance; it was in the Skeleton Valley area that he lost the beam and found his compass useless. No doubt they tried to bring him down, but outside of paralyzing his instruments, they were unable for some reason to stop him. Then there's Simpson; his whole radio outfit went deader'n a tack hammer in that neighborhood. Whether it's a ray that is causing all this havoc or not is hard to say, but it sure begins to look that way. That would explain why nothing happens when the government planes make the run."

"Well, those other ships went down during storms," Watson commented. "That would be just the time for bandits to bring down a plane, causing the rest of the world to believe that the storm had forced her down."

"Weldon will soon be pulling up over that valley now," Tom said. "He can't be more than a hundred miles from her now. I'm going to stick around until he gets past."

"Well I'm not figuring on leaving here for a while myself," Jim replied walking over to examine a large map of the route hanging on the wall.

CHAPTER II

The Story of Skeleton Valley

THE next moment the loud speaker of the radio set filled the room with its roar, and the three men turned as one toward the instrument.

"Kimberley Air Field 64. Hello Watson." The well known voice of Weldon came from the speaker.

Quickly throwing the changeover switch of the antenna to the transmitting side, Watson at once answered the call, then switched the receiver into circuit again.

"Got you O. K., Watson," the pilot's voice came in again, "Motors are running perfectly, radio reception is good and beam signals clear. Storm approaching ahead. I'll call you again, chief."

"Didn't I tell you," Jim burst out as the voice ceased, "Storm approaching ahead, that means from the south-west. An hour ago you would have thought, looking at that sunset and clear sky, that there would have been perfect weather all along the hop. That's where this tropical weather gets my goat. You start out with a clear signal and within an hour you're bucking the worst storm that ever hit your blades."

"If he can only keep to the beam," Tom replied, "He'll have little to fear from the storm, for these Greysons can outride anything short of a tornado."

"Yes, but about every third storm around here *is* a tornado."

"Say, chief," Tom turned to Watson, "Where did they get the name Skeleton Valley?"

"Well, as near as I can tell you, that name started from reports from natives that no man or beast entering that valley ever returned; and that the floor was practically covered with the bones of those caught in there."

"Of course," Jim spoke up, "these yarns are exaggerated due to the superstitious nature of the blackies, but still, you will find that whenever they put their taboo on a place there is often some reason for it outside of imaginative ones."

"Approaching close to bad storm," Weldon's voice came from the wireless receiver, "Beam signals weak, motors perfect, compass is acting queer. May have to leave the beam soon and rise above the storm."

"Hello, Weldon," Watson spoke into the transmitter as he slapped the switch to the transmitting side. "Keep to the guiding beam all the way, if you can, unless it runs through the core of the storm. Your chances are better if you stick to the beam and open her up full."

"Got you O. K., chief," the reply came in strong and clear, "I'll soon see how things look. Your signals are a bit weak. The storm is probably interfering with my reception. Am about fifty miles from Skeleton Valley."

"If Weldon passes over the valley at a low altitude, then your air bandits, if such they are, will have less trouble in bearing his ship go over than if he rose higher. Also it'll put him within easier range of their ray or other weapon," Tom spoke up, as the voice of the lone pilot ceased.

NO one replied, and for a few minutes no sound was heard in the room but the intermittent outbursts of the buzzer.

"Listen," the sharp curt voice of the chief froze the others in their tracks. "The buzzer."

"It—it's going," Jim spoke in a nervous voice.

"There, hear that?" a note of excitement rang in Watson's voice, "The buzzer is faltering. The sounds are not clear and sharp—they are hesitating."

The chief of the airport was right. The clear musical note of the little instrument was gradually becoming coarse and uneven. Occasionally it would seem to freeze and skip a note, carrying on again with the greatest difficulty, emitting split and broken sounds in a seemingly desperate attempt to keep going.

"Maybe it's the buzzing device here," Jim offered half-heartedly. But no one replied. All attention was being drawn by the unmistakably dying sounds coming from the small instrument on the wall.

Watson was now pacing the floor of the room in a nervous state. "He'll never make it," he muttered more to himself than to the others. "He'll never make it." Then pausing in his tracks a moment, he suddenly turned to the two pilots:

"I'll call him back whether he thinks he can make it or not, and not another man of mine will fly this damn line on a night run again until we find out what's at the bottom of this. Something is playing havoc with our guiding beam and instruments. That's certain."

"I'm with you on that, chief," Roger said.

"And I'm behind you to the last," was the eager chorus of Curtiss.

The buzzer was now making attempts to continue, but was sending out only one of every five or six notes.

With alarm showing on his face, Watson grabbed the transmitting unit and throwing the switch, spoke into the mouth piece.

"Hello, Weldon," he spoke. "This is the chief calling. Answer me if you hear me."

Putting down the mouth piece, he now changed the switch to the reception side, and the three men waited with nerves on edge for a reply. Would Weldon's voice come through? Was he still on the beam? Had he reached the valley yet? Such thoughts ran through the minds of the group in the little office of the Kimberley air field as they waited with swiftly beating hearts for a reply; for a word from the lone pilot out there fighting his way against odds over the vast expanse of storm torn jungle.

A Rescue Party

THE musical hum of a transmitter generator came from the speaker and three pairs of eyes were riveted on the wireless receiver. Three men stood as statues facing the loud speaking unit.

"Hello, chief," the familiar voice of the pilot broke through a curtain of static, a voice that sent the blood pounding through the veins of the three men and brought the natural color back to their pale cheeks. "I have lost the beam," continued the voice, "It kept weakening as I approached the valley. Also my wireless receiver is out of order and I cannot receive on it. My compass is frozen tight and has a tendency to point almost straight down and up although I have removed it from all electrical instruments to make sure that they were not throwing it out. Storm is unusually high and I am flying below it. There is little wind but torrents of rain. I will have little trouble in riding out this storm which is mild. Continuous lightning flashes help me in keeping my bearings at present. Will call you again soon and report, but cannot receive for my receiver is out."

Picking up his desk phone, Watson spoke into the instrument:

"Hello Jake, this is Watson. Get my Benson speedster ready to go up; I may need it any minute."

"What now?" Tom asked as the other hung up the phone receiver.

"Just this. If Weldon doesn't come through I'm going out there and find out why."

"It isn't your job, chief. If he goes down you'll have lots to do right here as the boss of this field. Listen, Watson, I'm ready to take the air whenever you say. You can do more than I can by remaining here, but you can't do any more than I on a trip of this nature."

"I am relief pilot this week," Jim spoke up, "So I guess that automatically puts me in line for the job. Weldon is a close side kick of mine, and if he comes down I'm going after him whether I get permission or not."

"All right boys," Watson replied quietly, "If there's any need of it, I'll let you both go. But we'll wait for further developments."

"But the buzzer has stopped altogether now," protested Jim. "And that's enough to tell you that something's wrong out there. Besides, his radio has gone bugs and the compass has frozen on him. Good heavens, man, isn't that proof enough that he's running into the same trap that got the other fellows?"

"That's enough, Jim. I know how you feel, But under the circumstances we must be sure of our actions before we make a move."

"The buzzer signals weakening, means that his small transmitter is unable to break through," commented Tom. "There's something mighty queer about the whole thing, Watson."

A sound from the radio receiver silenced all parties. The next moment Weldon's voice came through, but at a much fainter strength than before.

"Approaching close to Skeleton Valley. Flying low. Rain falling in torrents. Radio transmitter working poorly and compass still tends to point up and down. Extreme left motor missing slightly. Sickening feeling in the air, as if some invisible force was sapping one's strength away."

NO sooner had the set finished the message than Watson whirled around in his chair:

"Get into your duds, you guys, you're going through and going damn quick."

Grabbing the phone, he pushed a button and spoke into the instrument:

"Hey, cook! Hello! Hey, where's that—hello, say, bring over an emergency ration kit and step on it. If it's not here in one minute you'll be looking for a new job."

Slamming the receiver on the hook again, the airport chief pressed another button and again lifted the earpiece:

"Hello, Jake. Say, run the speeder out onto the field. She's going up pronto."

As he replaced the receiver, the two pilots re-entered the room, buckling on their helmets and parachutes as they came.

"Hello --ief," Every man stopped dead in his tracks as the radio spit out the words amid a rain of static. They were weak and broken. "Transmitter working poorly, hope you get me O. K. Left motor missing bad now—centre left—starting—weaken. Am—king for landing place. Over the valley—feel sick—weak—drawing my strength—." The voice ceased for a moment, then continued: "Rain coming down heavy. —treme right—missing—only two left now. Will have—leave ship and jump."

Again the rapidly weakening sound stopped, and nothing could be heard but the steadily increasing static that snapped and crackled in the speaker, making it almost impossible to distinguish the weak signals of the lone pilot. Watson's fingers dug into the arms of his chair as he sat motionless watching the radio speaking unit. The pilots stood silently in their tracks, their unbuckled straps forgotten as they waited for further word. Each man felt that the crisis had arrived, that the next message would tell of Weldon's victory or of his doom.

"God," Jim blurted out, breaking the silence. "If we could only have warned him to steer clear of that val—"

"Chief," the weak and almost unintelligible words of the battling mail pilot came from the speaker, mingled with crashing discharges of static, "Centre left—dead—gliding into valley. It's hell. All elect—paralyzed. Last motor missing. God she's stopped. Good-bye chief. Valley below—blazing inferno—valley of hell. I'm going to leap. Find me in—devilish valley."

CHAPTER III

Into the Air!

AS the voice ceased, Tom sprang into action.

"Come on, Jim, it's our move. We'll keep in constant touch with you, chief, and check up on the atmosphere as we go. Come on, Jim."

Buckling on their equipment as they went, the two pilots followed closely by their chief, hurried from the little shanty and ran across the field towards the dark outline of the waiting plane. Reaching the ship Jim at once climbed into the radio operator's seat followed closely by his companion, who took the controls.

"Is the radio equipment perfect?" barked Watson to the mechanic who stood by the plane.

"Yes sir."

"And their ration kit on board, and a full supply of rockets? And how about the machine gun and side arms?"

"All complete, sir."

"Then pull air," he turned to Tom who was sliding his goggles down over his face. "And if there's a ghost of a chance, get to Weldon and bring him in."

Tom's reply was drowned out by the roaring of the motors as with no further delay, he started down the field, the fleet little speedster accelerating at a marvelous rate.

As the ship levelled off and commenced its time-defying dash to the south-west, Jim started the automatic radio signal transmitter and tested out his main transmitting and reception radio units. Finding everything in good working order he connected his ear and mouthpieces onto the local phone circuits by means of a four-pole two-way switch, then spoke into the mouthpiece securely fastened to his helmet.

"Well, Tom, we should make it in a little over an hour with this speed demon."

"It's close to two hundred miles to Skeleton Valley," his companion replied, "We'll need an hour and a half with the wind against us as it is now."

"If Weldon was quick enough to jump clear and spread his sheet, he probably landed safely."

"If he landed in that valley, he will probably be spotted by that gang."

"Then you also believe that it is the work of air bandits, eh?"

"I was a little doubtful until I heard his own account of things. Did you hear what he said about getting a sickening feeling?"

"Yes, and what makes things more puzzling is his description of the valley as a blazing inferno."

"Probably a blinding light of some sort used to confuse the flyer or maybe the light of their base below."

"No, Tom, I think it was more than that. Weldon is a pretty cool guy as a rule but its plain that he was scared plenty when he described that valley below him. I have a hunch that he saw something that just about scared the wits out of him."

"Whatever it was, it is right in that valley, and we're going to get at the bottom of it before we come back."

"Well, we're making good headway and the radio beam shows no sign of weakening."

"It wont until we hit the valley neighborhood. That's where it disappears and the motors go dead."

"WELL," Jim spoke in reply as he swung the machine gun around on its ball-bearing swivel, and inserted the first shell of an ammunition belt into the firing chamber, "If it's going to be plain aerial warfare, we stand a pretty fair chance with a speed boat like this ship. But if it's a ray that they're using, which seems to be the case, then—"

"Then," cut in Tom grimly, "the fighting's going to take place on the ground."

"You said it. I'll bet your right hand is itching to slip the safety catch off from your automatic."

"Clouds ahead, and a liberal sprinkling of lightning," Tom changed the subject. "That's the storm that just passed the valley—the one that Weldon hit. Well, we'll hit it under more favorable conditions. We won't have to fight storm and valley both at the same time."

In a few minutes the swift flyer tore into the front of the storm as it sped across the black jungle wastes. On and on, guided by the narrow radio beam, sped the roaring plane. Rain fell in torrents, cooling off the hot stifling air and causing a noted drop in temperature. Lightning cut vividly across the black thunderheads above the ship, and deafening crashes of thunder echoed between the clouds and the dark dismal land below. The swift speed of the ship however, soon put the storm behind them, and again the clear soft tropical sky with its millions of sparkling gems looked down on the racing machine

"Jim," Tom spoke through the phone circuit, "Better call the chief and tell him that everything is O. K. We're getting close to the valley now. Better keep in touch with him constantly from now on, so he can check up on us. Don't say anything about Weldon or the valley though, for someone may be tapping in on our message. Get me?"

"O. K. Tom."

In a few minutes Jim had a call sent out, and almost instantly a reply sounded in his ears.

"Hello Jim," the chief's voice came through. "I was just about to call you. Your automatic signals are coming in normally, and your transmitter sounds healthy. How are things?"

"Fine, chief. Everything working perfectly and motors are all pulling fine. Just passed the storm that Weldon hit over the valley and the sky is clear ahead of us now. We are now pretty close to the valley. The beam registers strong and we are making an average of about 140 miles. The compass so far is O. K."

"Very well, Jim. Now get a call through to the coast. I can't get them on my set at all. If you raise them, report Weldon's forced descent, and ask that a search ship be sent out from there. Also warn them to send no more ships over the valley. They have one scheduled to leave for here at six in the morning. The telegraph line is out of order so our only hope is the wireless."

The Strategy

AFTER the signing off from the home field, Jim at once sent out the call of the Capetown government wireless station. Receiving no reply, he tried again and again without success.

"I can't raise the coast station," he informed Tom, "And usually they're an easy station to get."

"The valley is between us and them."

"Yes, but it'll take more than a magnetic ray to interfere with the wireless."

"It's beginning to look as if our bandits are using more than a ray."

"I don't get you."

"Well, this may sound impossible and foolish, but it appears like there's a large magnetic field or screen spread in the air directly between us and the coast field. It's likely spread right across our route and this field is not only deflecting all radio signals that strike it, causing poor communication between you and the coast, but it is also the cause of our ships coming down. As soon as they enter this field, their electrical equipment, which includes radio, motor ignition and the guiding beam, become demagnetized or depolarized in some way, while all delicate magnetic and electric instruments such as the compass, become useless."

"By Jove, Tom, your idea fills the bill all right. From the description given by Weldon, it appears as if the plane entered a field of some sort which has only feeble effects on the apparatus at first, but increases as the plane gets farther into the field. But how in the mischief can any white man produce a gigantic magnetic field like that in the air?"

"How can a man in New York see what's going on in London by means of a lot of electrical apparatus? To you or me the one seems as easy as the other, only we know that the one can be done and yet because we have never seen or heard of a gigantic magnetic field being produced in the air, we doubt the possibility of it being accomplished."

"Then if there's a screen of some sort across our path, how is it that some of our ships fly the route without a quiver while others have all kinds of trouble or disappear altogether?"

"Because the screen, or whatever this trap is, is only turned on when a ship is approaching that they want. That explains why some planes fly over the valley and do not register a single defect in their instruments or controls."

"And you think that but for this magnetic barrier across the valley I would be able to get Capetown on my radio?"

"It sounds reasonable, doesn't it?"

"In a way, yes. But if such is the case then they must have that field on now, for I can get no radio signals from the west at all."

"THEY probably have got it on. Look at your compass. Mine is pointing nearly west."

"Mine is too," admitted Jim, "But what in the mischief have they got their net spread for now? The next plane is not scheduled to pass over the valley until the morning."

"We're headed that way aren't we?"

"But you don't think—"

"If the valley is a base for a ring of air bandits, then you can depend upon it, they have a man at each end of this line, tipping them off as to shipments that are leaving the airports."

"Then you think that they are aware of our approach and have spread the net for us?"

"That is my idea; only we are not going to fall into their trap. Listen, Jim; our radio messages will likely be picked up by this gang, so call Watson and tell him that you can't get the coast. Also tell him that we are having trouble with one of the rudder rods and are landing to fix it. Tell him that everything else is O. K. and that we will resume our flight as soon as the repairs are made. Also shut down the automatic transmitter and then tell him that you've burned out a tube, and have no spare one. We don't want that transmitter going after we land because it'll give the location of the ship away. Also, we can't shut it down without giving the chief a good reason or he'd think we had crashed like Weldon and would be tearing out here after us himself."

Shutting off the automatic transmitter, Jim then called the field and having concluded his conversation with the chief, connected himself again to the local phone circuit and resumed his talk with Tom.

"I think I get your idea," he said. "You are afraid that our bandits will see us drop and come gunning after us. Is that it?"

"Exactly. But if they think that we are just going to make a five-minute repair job, then they'll just wait until we take the air again. That'll give us a chance to get away from the plane and get located before they get curious enough to come looking for us. We're close to the valley now, so we'll drop down and squat in the first clearing we see. Keep your eyes peeled for a parking place."

CHAPTER IV

Into the Valley

IT was not long before a break in the jungle afforded them the chance they wanted. A stretch of clear prairie land sufficiently large and clear, as viewed from above, promised a good landing place, and without further delay Tom banked the ship and dropped lower.

"We'll have to take a chance on hitting rocks or holes," he informed Jim, circling the plane for the final drop. "That grass looks pretty high and you can't tell what it's hiding."

"Well, we've got to chance it," Jim replied, as the ship glided down over the jungle growth on the north edge of the clearing, "But break her as quick as you can, Tom. The less coasting we do the better."

As he finished speaking, the wheels of the ship touched the ground, rebounded, settled lightly again and rolled to a smooth stop.

"A perfect field, by Jove," Jim exclaimed as he unbuckled his helmet.

"Better keep your pistol handy and your eyes open," Tom cautioned, "We're not on any good-will flight to-night."

"What about the machine gun? We'd be fools to leave it here in the ship, and bigger fools to try and lug it through five miles of jungle to the valley"

"We're not much over a mile from the entrance to the valley, but even that is too far to carry the gun in this country. We'll ditch it in the thick brush over there near the edge of this clearance. Then, if we come back and find the ship taken, we will be able to make good use of it. Bring an extra string of shells, we may need them."

Together they quickly carried the machine gun to the edge of the clearing, and in a few minutes had carefully hidden it.

"Take a good look at this spot," Tom warned, "We may want to find it in a hurry on our way back here."

"There's a tall dead tree with its top broken off as if it had been hit by lightning, not far west of here. You can see it for a mile for it sticks up well above the rest around it."

"Well then, let's get going. It's a good mile to the entrance of that valley, and heaven knows how far away our bandits are."

Fortunately for them, there was little of thick tangling underbrush in that section of the country, and they were able to make rapid progress.

"We should have given Watson a hint of what we were up to," Jim commented, as he trailed close behind his companion, "He'll be worrying his head off about us when we fail to come through on the wireless."

"It's better to have him worry than to have a committee of air bandits waiting for us to walk into an ambush, isn't it?"

"I guess you're right, Tom."

"I guess we'd better put a damper on our tongues before we're heard. We're making plenty of noise with our feet right now."

"O. K." Jim replied in a low voice.

SILENTLY, with eyes and ears alert, the airmen approached the clearing at the entrance to the valley. Pausing to rest and reconnoitre, they kept in the shadows of the trees and looked out over the clearing before them, which was flooded

brightly in the rays of the moon.

"The blackies were right, Jim, when they said that no trees grew in the valley. Look out there, just a clear rocky floor, stretching as far as you can make it, out between two high ridges of rock. There is scarcely enough grass on the ground to cover it, and not a single tree ahead of us."

"Tom," was Jim's reply, "My compass is stuck tighter than the devil. I can't even shake it loose."

"We won't have much use for it just now, so that doesn't matter. What we want to do now is see that your gun fingers don't stick. We've got a clear stretch before us and not a straw to hide behind. That means that we're not going to be able to take them by surprise."

"This place gives me the creeps. Why you can't even hear a darn cricket chirping and there isn't a sign of a bird around. In fact there isn't a single sound to be heard outside of the wind."

"Don't worry about sounds. The chances are that the night creatures around here heard us coming and are scared stiff. It isn't every day that human beings are seen travelling around this close to the valley. Listen, Jim, Weldon is in there and we're going in after him. Get me?"

"All set, Tom, start going. There isn't a two-legged man that can throw a scare into me, but that valley gives me the creeps. There's something uncanny about the place."

"Well, here goes. Follow close now, and keep your eyes peeled as well as your ears."

Quietly but swiftly they started out across the clearing toward the flat barren stretch of land running between two massive ridges of rock.

"We'll head for the ridge on our right and stick close to it," Tom spoke in a low tone, "We may have a chance there of finding a notch to dive into in case we want to suddenly make ourselves scarce."

ON up the moon-lit valley floor they pressed, the rocky ledges getting steeper and higher as they progressed. They were now walking on broken loose sandy dirt which stretched ahead as far as they could see. The moon had now become blanketed by clouds and darkness swept down over the jungle night.

"God, this place is creepy," Jim spoke in a low tone, "There's not even a weed growing here now, and there's not a tree or a blade of grass in sight. Why! there's not even a bug in the air or a creature in sight anywhere. Just silence. Dead nerve-racking sil—"

"Bank of thunderheads in the west, Jim," was Tom's reply. "We're in for another of these tropical storms."

"Tom!" Jim's voice made his companion turn with a start, "I see an object up ahead. Looks like it might be—"

"It is, Jim. It's a plane. The moon's coming out again. See the blades glittering on her in the moon-light?"

"We'll soon know what's what then," Jim's fingers tightened on his pistol butt as he spoke.

"Keep your eyes peeled," his companion cautioned as he hurried forward, "Those air bandits may have a nest in these rocks here. It's about the only place for a secret hide-out."

"I wish we'd meet those devils and start some action. I'm losing my pep, Tom. This hiking isn't in my line."

"It isn't the hiking that's doing you out. Remember how Weldon felt when he came down?"

"You mean that—"

"That we are in that mysterious magnetic field right now. Your compass will show you that much. It's having the same effect on us that it had on Weldon."

"Then you feel it too?"

"I sure do, and the further we pull into this valley the worse it is getting."

"Then it looks like we are approaching the source of this screen."

"Yes, but if it keeps up we'll not be able to make it much farther," Tom replied, "We'll see what we can discover at the plane anyway. She's hardly a quarter of a mile away now."

"Well, I don't blame the darkies for giving this place the taboo," Jim remarked as they hurried forward, taking advantage of every shadow thrown by overhanging rock ledges. "There isn't even a bug in the air, and look at those white bones out there."

"That's Weldon's ship, Jim," Tom remarked as he left the shadow of the rocks and advanced toward the centre of the valley. "The moon's just gone under another cloud, so now's our chance. Let's step."

Quickly the two cut across the distance between the rocky wall and the wrecked ship, taking advantage of the shadow cast over the barren valley floor by the clouds.

"Duck!" Tom warned his companion as they approached the wrecked airliner, "Get under those broken wings, the moon is coming out."

Another Mystery

A FINAL rush and they were in the shadow of the wreck, but none too soon, for the next moment the bright rays of the moon reflected brightly on the floor of the valley.

"We'll take a look around and see that we're not spotted," Tom again spoke, "Then we'll look her over."

"Tom!" Jim clutched his companion's arm as they crouched in the shadow of one of the broken wings, "Look! that white thing out there looks like a sheet."

"God! you're right, Jim, it's a parachute and Weldon's probably under it. Look! There's another cloud pulling under the moon, and it'll shade this place long enough to allow me to slide over to that 'chute. Now you stay here and see that no one creeps up on us. Get me?"

"All set, Tom. Get going, and if anyone tries to get you, I'll spot him. Leave the rifle here, and I'll cover you."

Again the valley was wrapped in gloomy darkness as a large cloud hid the moon from view. Tom wasted no time, for running in a stooped manner he started out toward the white object a short distance away.

Carefully Jim listened for a sound that would tell of the approach of another party, but utter stillness prevailed in the valley. Only the sound of the wind as it swept around the rocky ledges high above, reached his ears. Not a sign of the bandits or other life could be detected.

Feeling assured that so far they had not been discovered, Jim made a quick examination of the wrecked ship. His first thought was of the mail bags. They would be gone no doubt, but he'd look anyway. Looking down into the badly smashed mail compartment, an expression of surprise swept over his face. The mail bags were still there. He was instantly on the alert. The mail was still in the ship untouched, therefore he reasoned, the bandits had not yet located the fallen ship. He strained his eyes for a sign of anyone approaching, but not a sound save the wind reached his ears. He was aware of the increasingly tired feeling weakening him—overcoming him.

"God! I wish Tom would hurry," he muttered to himself. "This place is getting me and if we don't soon start, I'll not be able to hold out until we get back to the plane."

He looked up at the sky as the moon-light broke through a small opening in the heavy cloud beneath it. Taking advantage of the momentary flood of light he looked across the valley floor toward the white parachute. A small dark huddled object lay motionless half way to the white object, and Jim grasped his rifle firmly. The shadow of the cloud again swept down over Skeleton Valley, and he saw the dark object move. It was Tom, rapidly approaching under cover of the

darkness. In another moment the dark form of his body loomed up before his waiting companion.

"Let's get under," he gasped, "The moon's coming out in the clear. See any one?"

"Not a damn thing, Tom, but we soon will. The mail bags are still in the ship. Was that Weldon out there?"

"Yes, Jim, it was him. Jim, we're getting the devil out of this place while we're able to go. There's a storm coming over and we've got to get out before it breaks.

"But—but Weldon."

"He's dead, Jim. He made a perfect landing in that 'chute and hasn't a bruise on him. What's more, he landed in this place alive."

"Are you sure?"

"See this small box that I brought back just now? I found it tucked under Weldon's arm. It's a diamond shipment from one of the Kimberley mines. The most valuable piece of the whole mail shipment. He took the box with him when he jumped, and was able to hold it all the way down."

"But how—"

"Let's get going, Jim. The moon is under and we've a good couple of miles to go before we're out of this place. Come on."

CHAPTER V

A Desperate Situation

TOGETHER they made a dash across the stretch of barren valley floor to the rocky wall that towered high above their heads. Jim sank wearily to the ground as they reached the shadows of the rock.

"I don't know what's eating me, Tom, but I'm just about all in."

"It's this infernal valley. There's a poisonous element in the air and it's sapping our strength away. There's likely a deposit of some chemical substance in this place that is causing this. That's what got Weldon. I tell you, Jim, we've got to get out of here quick. I'd rather take a chance on running into them bandits a dozen times than have my legs give way on me here. If we ever give in we're done for, because we'll not have strength to get up again."

"All right," Jim replied wearily, "Lead away, Tom."

The moon had now disappeared behind the heavy thunderheads that were rapidly rising. A streak of lightning cut vividly across the west and deep rolling thunder echoed and re-echoed its solemn warning between the walls of rock.

"Jim, there's something pretty funny about the whole affair," Tom spoke as they pressed forward down the floor of the cavern side by side, "Weldon landed alive and unhurt in this place, and yet died before he could get out of his straps. He had one shoulder slipped out of his 'chute straps when I found him, and another ounce of energy would have been sufficient to get him free altogether. But that's as far as he got."

"The storm's going to break soon," Jim commented briefly as he exerted all his strength to push forward.

"We'll have to go through it, Jim. This valley is poisonous, and it'll get us if we spend much more time here. That's what got Weldon, I'm sure. He was probably stunned when he landed, either by the bandits' ray, or in landing, and this poisonous air got him before he regained his senses. He probably had just enough strength left when he came to, to get out of his straps."

"Then that explains why there's no living creatures or even vegetation in this infernal place."

"Watch your foot-steps, Jim, it's pretty dark. Take advantage of the lightning flashes to spot out the ground ahead of you."

"The rain's starting." The weariness of Rogers' voice told of his waning strength.

Tom now became fully aware of his companion's condition and feeling his own strength failing fast, realized the need for haste.

"Here, Jim, lean on my arm; I'm still feeling O. K."

The rain now started to drop heavily as a loud peal of thunder rent the air

"God!" A sudden exclamation from Tom renewed the life in his companion, "I might have known."

"What's wrong?"

"Jim!"—he pointed out across the blackness that enveloped the floor of the valley. Jim looked and gasped in astonishment. A glow of amber-colored mist was rising from the valley floor. In all directions as far up and down the cavern as they could see the whole floor was glowing with that same terrible heat close to the ground.

CRASH! the thunder echoed down the deep ravine and a vivid flash of lightning momentarily blotted out the glow, while the rain increased, falling in torrents.

Tom looked around him in horror as he assisted his weakening companion along. Thin tongues of fire were now leaping upward from every sharp point and edge of rock. Here and there out on the barren stretch before them. Small columns and tongues of fire could now be seen shooting their amber-colored flames up into the air as high as three or four feet, terminating in a sharp point that faded in a strung of fiery sparks.

"Jim!" he shouted, shaking his companion in an attempt to shake him into new activity. "For God's sake, Jim, we're done unless we keep going and get out quick. Jim, I see it all now. This valley got Weldon and it's going to get us if we weaken. We've only a half mile to go until we hit the trees."

"Let's rest a minute, Tom," pleaded Rogers, "I—I can't make it."

"We can't stop, Jim. We can't. The rain is allowing this stuff to leak off, and the more it rains the more poisonous the air is getting. I'm nearly ready to go under myself. But it's plain suicide to stop a single minute. The rain is allowing this stuff to leak to the surface in increasing quantities. See, Jim, fiery sparks are now leaping from every sharp point in the valley. Look! turn your fingers up and you will see faint amber beams stretching up from the tips."

Feeling his own strength about to give way, Tom desperately plunged on half-carrying, half-dragging his almost unconscious companion. He cursed the steadily increasing orange hue and fiery shoots that were steadily becoming longer and fiercer. He felt his breathing becoming a difficult operation and his whole system rapidly losing all feeling and strength. It was as if the very life of his body was being sapped out by some invisible force.

On and on they struggled, heedless of the storm that raged about them. An eighth of a mile more and they would be out of the deadly cavern. But Jim was now utterly exhausted. He paused in his tracks, swayed dizzily and slipped silently to the muddy ground.

"Jim! Jim!" Tom shook him in vain. The limp body of his companion told too plainly that he was past consciousness. Exerting all his strength, Tom picked up the still form, and with drawn distorted face made a desperate attempt to reach the shrubbery just a few yards farther on.

The Answer to the Mystery

STEP by step he shortened the distance as his breath came in shorter and shorter gasps. The whole valley behind him was now aflame, a blazing inferno, but ahead the disturbance was faint. He was almost out of the area. Struggling blindly on, his knees quivered under the heavy burden and threatened to give way on him, but by sheer force of will power he continued his tortuous walk. His arms were becoming paralyzed and numb but there were just a few more yards to go. A vivid flash of lightning showed the line of stunted trees a short

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The ARCTIC RESCUE

by Walter Kateley

(Illustration by Winter)

I saw a long dirigible balloon in flight, but it was not in the form of a balloon but a large whale! Surely I was dreaming! Whales do not fly!

THE ARCTIC RESCUE

By the Author of "The World of 100 Men," "The Gold Triumvirate," etc.

EVEN an Arctic owl becomes heavy if you carry him far enough.

I had carried this one quite far, and then quite a bit farther. I wondered if it would be safe to take a short rest.

I glanced at the low sun and the frosty horizon. There was no sign of storm. So, sticking my rifle butt in a snowbank, I laid the bird down and sat down on the edge of the drift.

He was one of the most magnificent specimens of snowy owl that I had ever seen. I wondered if it would be worth while to mount him; and I wondered if his flesh would be very tough if it were well boiled.

We were sadly in need of change of meat at the ship. For nearly three years now we had lived on a very restricted diet. And so, when we had sighted this great bird. . . . But perhaps it would be best to start at the beginning, and tell how it all came about; and how we came to be living in this whaling boat, frozen fast in the ice, away in the Arctic wilderness.

In the first place, I am an amateur naturalist. For the better part of my life I have employed my spare time in fussing around with taxidermy, birds' egg collections and the like.

At the time of which I am writing, I had been earning a livelihood for a number of years as assistant examiner in the patent office which I had found very interesting work, but on the whole too confining.

The principal redeeming feature about my position was that it enabled me to live near the great Smithsonian Institution and National Museum at Washington, where I spent a great deal of time, especially in the Natural History department. I took a very keen interest in all the new collections that were brought in, and in the expeditions that were sent out to collect data and specimens.

WALTER KATELEY

Gradually the idea grew upon me that it would be one of the finest experiences of a lifetime to be able to accompany a scientific research expedition on a long voyage. But because I really was not a scientist by education and training; I knew my qualifications were so limited that there could be but little hope of my ever being selected for such work.

It so happened however that one of my old acquaintances was elected a member of the board of governors of the Museum; and through him I became more or less familiar with the method of management and the securing of specimens for that great institution.

THE recent Antarctic exploration of Admiral Byrd has brought to the attention of the whole world the painstaking care that must be exercised in fitting out an expedition to conquer the white wastes of the frigid zones. For without means of communication with civilization or sufficient equipment, almost certain death awaits the explorer who would tear from nature the secrets she has guarded with barriers of snow and ice.

But suppose you were in an arctic expedition, ice-bound in those great wastes, and slow but certain death approached. Perhaps in a moment of madness a great idea might flash into your brain that might mean the salvation of yourself and your fellow-explorers. In this astounding air story Mr. Kateley shows indeed how fertile and adaptable is the human mind when such grim necessity beckons.

ONE evening at a lodge supper he remarked that a whaling ship had recently returned from an Arctic trip; and that they had reported the capture of two gigantic blue whales. If the reports were true, these whales were by far the largest ones ever taken.

The crew reported having sighted a large number of these monsters; but having already secured a capacity load, they had been obliged to steam away and return to port. The museum authorities had been so interested that they had sent a representative to examine the ship's cargo and records. The story was further substantiated by interviewing a number of the ship's crew. The result was that the envoy had been convinced of the genuineness of the report.

My friend, the board member, believed that the ship owner intended to send her back to the same region as soon as she was put in repair; and he felt that the museum ought to make an effort to have one of the big whales brought to Washington; perhaps by sending a couple of naturalists to take measurements and see that the catch was properly preserved.

I was very much interested in the project and the next time I met the board member I asked if there were any developments.

"Yes," he said. "We have made some progress. We have submitted a proposition to the owners, and they have considered it favorably. We have offered to provision the boat for the voyage, furnishing all necessary auxiliary equipment, and to send two representatives to protect our interests, the conditions being that the ship shall continue the search for three years, or until a suitable specimen is taken.

"The chief difficulty," he went on, "is to find some one of proper qualifications who is willing to rough it and endure the hardships of such a voyage. You know the circumpolar regions are very inhospitable. I had thought of offering the position to you," he finished jokingly.

"That's a good egg," I replied. "I had thought seriously of suggesting that very thing."

"You wouldn't give up your good position to go on a skylarking expedition like that, would you?" he asked incredulously.

"Well, yes," he said at length. "I wouldn't have to give up my position permanently. Since the museum is a semi-government institution, perhaps I could get leave of absence."

Aboard the *Marasion*

My friend looked at me long and gravely before he spoke.

"Well, yes;" he said at length. "I suppose you are to some extent qualified, what with your taxidermy and other hobbies. But you have no diplomas or degrees or what not to show the board that you have special qualifications."

"Well," I countered, "neither did Darwin have any diplomas or degrees to show that he was a qualified naturalist or geologist when he was appointed to go on the famous voyage of the *Beagle*. What he did have, however, was some very good friends; and since you are on the board, I am going to put in a few days hoping."

"Well," he said. "I will think it over. But I want you to do some serious thinking too. Such a voyage is no joke."

I need not dwell on the happenings of the next few months. Suffice it to say that some three months later, one bright June morning I went aboard the *Marasion* with baggage; prepared to sail the seas from the Aurora borealis* to the Aurora australis** if need be to capture a blue Goliath.

* Northern Lights.
** Southern Lights.

Captain Baker, a round-bodied, round-faced man, welcomed me with enthusiasm.

He had been in charge of the former expedition of the *Morurion;* and he expressed the greatest confidence that we would be able to find and capture one of the monster whales.

"The Thompson Chemical Company delivered your preserving alcohol and a lot of other stuff," Capt. Baker said. "There is a large bottle marked 'Acid.' You must be going to start a drug store somewhere."

"I only intended to order three pints of the acid; perhaps they have made a mistake. I will look at my carbon copy of the order." So saying I fished out the order and ran my eye down the items.

"Yes, here it is, hydrochloric acid." But to my consternation instead of three pints it was written three gallons.

"Well, anyway, it is stowed under twenty-five tons of other junk now," said the Captain, "so we had better let it ride."

My co-worker, the other representative of the museum, officially designated as my assistant, soon arrived; a red-headed, agreeably-mannered young man, fresh from college.

"I brought along quite a large box of books," he announced apologetically. "I hope you won't mind my taking them along, if we can find room for them. You see, I intend to bone up on the sciences; I might get to be a naturalist, or something."

"I guess we can find room for them in the glory hole," said the Captain; "but I warn you that they will smell of whale blubber to all eternity"

THE mate proved to be a giant Norwegian. His hands were the largest human hands I had ever seen. And his jovial voice, even in ordinary conversation bellowed and reverberated with such force that he always seemed more like some fabled giant of mystical lore than a real person.

The ship was equipped with three whale boats. One was quite a large launch, equipped with a powerful marine engine and a very modern harpoon gun. The other two were very small boats, scarcely larger than a rowboat, equipped with very light motors.

The ship itself was one of the most modern in the whaling industry, having an electric light plant and the most modern of whale-handling machinery.

There was no ceremony about our departure, when everybody was aboard, we simply shoved off from the little quay and steamed out to sea.

The first few days out were quite uneventful. My assistant, Willard, became deathly seasick; and it fell to my lot, there being no doctor or stewards on board, to act in the capacity of both.

After perhaps a fortnight we arrived on the outskirts of the feeding ground of the whales; but as there were no whales in sight, we kept on; always traveling in a northerly direction.

In order to save coal we now hoisted sail and continued our northward journey in long zigzag tracks.

Not long after this we sighted our first whale; and Willard and I were treated to our first sight of a whaling crew in action. The mate taking command of the motor boat and directing the attack.

The scene proved to be a very exciting one for us; and the whale was finally successfully harpooned and captured.

He was only a small fellow; and soon the valuable parts of his carcass were stored in our hold and we were again on our way to the north.

During the "working up" of the whale, Willard and I were much interested in searching out and examining the vestigial bones which are the last remains of the whale's hind legs. They are the survivals of the time when it was a land animal and walked about the swamps and marshes, foraging for tender reeds or tall rushes, and having no thought of the time when the land should rise so high as to dissipate the swamps and deposit the glaciers of an ice age in their place and leave the poor whale no alternative but to take to the water or perish.

We were also much interested in the food substances taken from the great stomach. All the whalebone whales, and this was one of that description—live entirely on plankton, which they find floating in vast fields on or near the surface of the sea.

Plankton is made up of vegetable matter, such as diatoms, together with blue-green algae, with a liberal mixture of minute animals, mostly protozoa, and a seasoning of fish eggs and many kinds of larvae.

These the whale scoops up in his great mouth, together with much sea water. Upon closing his mouth, the water is strained through the fine whalebone fibres and the plankton retained, while the water is discarded.

CHAPTER II

A Killing

THE biggest whales live the farthest north, the Captain assured us. They like cold water; the colder the better. So we kept on, day after day, till we were far within the Arctic circle.

At length the Captain announced that we were passing through the waters where the great whales were captured on the former voyage.

But the days passed and no whales were sighted.

"They must be still farther north," said Captain Baker; and so we continued poleward.

We now commenced to encounter large quantities of floating ice, and the weather grew bitterly cold.

At last, just as we were about to turn back, two whales were sighted in the distance and the ship gave chase.

The animals were traveling in a northerly direction, and except once when they stopped to feed on floating plankton, they were forging right along.

But we gained on them quite steadily and were within less than a mile of them when, to our great disgust, the point of an ice floe drifted between us and them. We were therefore obliged to change our course and steam out around the end of the moving mass.

The whales had in the meantime traveled several miles on their course.

They kept to the open water, however, and by dint of liberal stoking we were soon near enough to make the attack by motor boat.

Willard was eager to take to the boat with the crew, but the Captain objected; saying that a little boat, which the slightest mishap might capsize, was no place for a land lubber.

In breathless suspense we watched the boat approach the largest of the whales.

It was a sight long to be remembered. The giant mate stood at the harpoon gun, directing the management of the boat, in a voice that came booming back to us over the crests of the ocean swells. The swells lifted the boat high in air and then sent it careening down the side of a deep trough, only to hesitate a moment before being lifted again to another crest. It did not seem possible that one could aim or fire a gun accurately from such an unstable craft especially in a sea of such great power.

AT times the great bodies of the whales were completely submerged; then again a portion of a long back with a small fin would protrude above the surface amid a swirl of foam. Or a trough between the waves would reveal a vast expanse of a bluish grey, gliding body. Or, maybe a great back would hump up in a ponderous curve; then the long posterior portion of the great length would flow,—flow is the only word for it—in a sounding maneuver, the unseen head perhaps searching the depths for some special plankton. The great flukes of

the tail, waving in their capacity of propeller in following the curve of the course, would be flung high in the air only to descend quickly into the waves.

Willard compared this tail gesture with the futile racing of the propeller of an outboard motor, when a wave lifts the stern of the boat clear of the water.

The bulk of the whale was so gigantic, while the little boat with its crew was so puny, it seemed impossible that there could be any danger to the huge beast.

But I was reassured by the thought that the microbes and bacilli that often slay us humans are so small as to be almost invisible.

With bated breath we measured the distance from the boat to the whale; until it seemed as though the mate must be intent on driving the boat itself, instead of the harpoon, into the animal's great side.

Then we saw the boat mount to the very top of a passing wave. As it hung poised for an instant on the crest, a short line of blue-white smoke shot toward the whale; and a moment later the quick, sharp detonation of the harpoon gun rang out over the sea.

The great tail flukes lashed the water to foam; and the whale shot forward with tremendous speed. We saw the coils of the harpoon line leap into the air and straighten out.

Then a muffled thud seemed to come from nowhere in particular, just as the whale bounded with a mighty flourish of his spreading flukes, high in the air.

"That was explosive in the harpoon. They have made a fair hit," said the Captain excitedly. "He is our meat."

Speedily we were under way, and the little boat was coming to meet us; paying out the great coil of rope as it came.

A line was dropped overboard and the whale line quickly snatched up and attached to the forward winch.

The Captain was now too busy giving orders to answer any questions, but as the huge mate appeared over the side, Willard had this one for him.

"Do you think the whale is dead?"

"Yes, dead as a mackerel," he answered confidently. And so it proved.

As the winch got to work, the line came steadily reeling in, as if dragging a dead load; and soon we saw the dark carcass approaching the side.

As it broke water alongside, it assumed unbelievably huge proportions.

"That is at least a whale and a half," said the Captain. "The old Museum will have to build on an addition in order to house him."

Indeed it seemed as though such would be the case; for this monster of the deep so far outran our previous conceptions of great mammals that we could scarcely credit our eyes.

As we gazed in pop-eyed astonishment the sailors were busy making the huge carcass fast alongside, for any attempt to hoist such a leviathan on deck was obviously out of the question.

Stout nets were brought up from below and spread under the whale to insure it against the onslaughts of sharks or killer whales, after having first inflated the carcass with air.

And now, for the first time since putting out the boat, we took thought of our surroundings.

Ice-Bound

TO the south of us the ice floe we had earlier encountered had assumed startling proportions. Its white expanse stretched away almost endlessly; and its eastern border, which we had rounded in our pursuit of the whales a few hours earlier, was merging with a previously unnoticed pack drifting down from the north. Thus all chance of returning the way we had come was cut off

To make matters worse, a blinding snowstorm came driving down from the pole; and the seething sea, now bitterly black in contrast with the pelting snow, assumed an angry aspect.

There seemed to be nothing to do but turn the ship's prow northward, and bucking the storm to make our way around one or the other of the converging ice floes.

In the evening the wind died down; but in the morning it rose again with greatly increased fury; this time from the southwest.

We were now in a very narrow lane running almost due north and south; and in order to prevent the quartering gale from driving us into the ice pack we were obliged to keep under way with full steam ahead.

For two days we kept on at high speed; searching the surface of the sea all the time with the binoculars for clear water.

At length, becoming alarmed lest we should penetrate so far into the polar regions that we would never be able to extricate ourselves, we decided to turn back and retrace our course; hoping that somewhere the sea might have cleared behind us. But we soon found our way blocked and were forced to turn north again.

Toward evening of the fifth day the wind died down; but at the same time the ice closed in around the ship so firmly that it blocked all progress.

The next morning the heaving ocean was gone; and all about us was one vast field of dead, motionless snow and ice. The ship and the great whale were firmly fixed in the ice, and deeply rifted with snow.

We were a glum and discouraged little band that busied ourselves shoveling snow all the morning, while the Captain took bearings and tried to locate our position.

"From our deductions we find that we are perilously far north," the Captain reported, "in fact a long way further than we had suspected."

What Hope?

OUR only hope of release was that a mild turn of the weather or a great storm might sooner or later open to warmer seas the path through which we had arrived.

Uneventful, cold and miserable were the weeks and months that followed.

Although our ship had been liberally stored with blankets and clothing, and although we had bought a few raw furs where we had touched the coast of Labrador, we were yet pitifully supplied for the rigors of the long, dark Arctic winter that would shortly be upon us.

Apparently there was no game to be had; and although there might be fish in the deep waters far beneath us, there seemed little hope of catching them.

Under the Captain's direction we set to work to cut up blankets and fashion them into red suits of underwear, under trousers and outer garments.

The giant mate busied himself for long hours constructing a heating stove from sheet metal and various odds and ends.

This heater was designed, with the help of a little precious coal, to burn strips of blubber and whale fat. And if one could bring himself to overlook a certain amount of smoke and fumes, together with an unbelievably rank odor, the mate's efforts may be said to have been successful.

As winter set in, we fell into fairly routine habits. The morning was given over to such work as was necessary about the ship; preparing food, making additional clothing and various other chores; while the latter part of the day—if one could call those dark stretches days—was free for each man to do as he liked.

At such times the officers and men usually devoted themselves to card playing and checkers; while Willard and I read the technical books that he had so providentially brought along, or held long discussions about many things, more or less scientific.

We racked our brains and searched all our books for knowledge of radio. But we found, somewhat to our surprise and chagrin, that neither of us knew anything of practical value,

nor could we find any aid in the books. If we could have built a sending set, we could no doubt have broadcast our predicament and position to the world, and have stood a good chance of being speedily rescued.

Or, if we could have rigged up a receiving set, we could at least have relieved the miserable monotony of our lives by picking up programs from the super-power stations.

We reproached ourselves most bitterly for having set out on such a voyage without giving a thought to learning the rudiments of a science that would have been of inestimable value in our emergency.

Here we had books on chemistry, entomology, comparative anatomy, geology and various other subjects; but nothing on the one important science that we needed.

CHAPTER III

The Coming of Day

DURING those long winter evenings we had ample time to discuss our predicament and lay plans for the coming of the brief summer.

At times the consensus of opinion seemed to be that we ought to abandon ship and try to make our way to land, and thence back to civilization, as soon as the rising sun should make such a course possible.

At other times there seemed to be a general disposition to stick to the ship, and trust that sooner or later a way would be cleared to the open sea.

We had no adequate idea of how far it might be to the nearest land, or in what direction it might lie. For we were a long way from the most northern grounds that we had intended to visit; and the charts and maps of a whaling vessel are ordinarily very sketchy and inadequate as regards land formations in partially explored districts. Ours were no exception.

However, as the long period of darkness drew to a close, we laid definite plans for sending out exploring and reconnoitering expeditions; and the giant mate set to work to improvise a couple of ice sledges, while other members of the crew strove to produce various parts of the necessary equipment, such as sled harness and poles.

It was finally determined to divide the men into two equal parties; one of which should stay with the ship, prepared for the breaking up of the ice, or any other emergency; while the others should go forth to explore on a trip calculated to take not more than a week at most; always making a rough chart of their route and keeping an eye open for any possibility of fish or game.

At the first peep of the sun over the southern horizon, I set off with the rest of the party; laden with provisions, guns, a mariner's compass and one pair of the ship's binoculars. Because I had appeared somewhat apt with the pencil, I had been chosen as official route-charter for the expedition.

I will pass over the events of this expedition, and several similar ones of the following weeks; because they were quite unproductive of any tangible results, except as they revealed the fact that we were in the midst of a vast area of unbroken ice and snow, and that there was no land or open water within a radius of at least a hundred miles!

IF the weather was too stormy, the men often suffered severely from exposure and frost-bite; and if it was fair and clear, they often suffered from snowblindness, since we had only three pairs of colored glasses and one pair of ordinary spectacles which we smoked.

At last, near the close of the season, and after a great storm, an exploring party reported seeing a lane of open water several miles away to the west of our position.

Great excitement prevailed, and hope ran high that the lead would spread in our direction and release us from our bondage.

But nothing of the sort happened. On the contrary, scouts sent to watch developments reported that the lane was growing narrower, and freezing over again at the near end.

Some of the men, and especially the giant mate, grew quite desperate in the face of this disappointment; and declared for taking one of the two small boats and making a dash for the open sea. It was evident that this was going to be the last chance of the year.

The Captain demurred; saying that one of the small boats could not be expected to live out the rough seas, and besides it could not carry water and provisions for more than two or three days. But he agreed that if the large whaling boat could be transported to open water, he would consent to allow at least a part of the men to make the attempt; although it seemed nothing short of foolhardy.

However, the distance was so great, and the boat was so heavy that it appeared like an almost impossible portage. But the giant mate, whose optimism and good nature rose superior to every obstacle, declared that the boat should go, if he had to carry it on his shoulders.

He ordered the fire started in the forge, and all the steel rod harpoon stock brought up from the hold. Then with the help of the blacksmith and the carpenter, he set to work to fashion steel-shod sleigh runners for the bottom of the boat. He detailed other men to erect a mast. Everyone joined in the work with the desperation of hope long deferred.

The Decision

AT the end of twenty-four hours, during which everybody had worked frantically, the ice ship was rigged with sail and runners and was ready for the journey. The cook prepared a hearty meal and we prepared to turn in. For my part, I was so exhausted that rest seemed impossible.

Then the question arose, who should go, and who should stay?

The Captain declared that his place was with the ship; but that any inclined to brave the hardship of a voyage in an open boat in an Arctic sea were at liberty to do so.

Willard and I held a conference. All day I had been undecided whether to join the desperate party or stay with the ship on a chance of future deliverance.

Willard seemed quite decided.

"Let us not desert the whale," he said. "We might never be able to get such another giant specimen; and think what would be lost to the world, especially to our museum!"

"This may be our last chance," I argued. "When the whaling boat is gone—if indeed it does go, which I very much doubt—there will be no possibility of our leaving the ship by way of water; and we might be imprisoned here until we die. Our supplies cannot last forever. Are you willing to give up a chance for life just for the sake of an overgrown whale?"

"Well," he answered stoutly, "Scientists have given their lives for far less."

"All right, Willard," I said, holding out my hand, "we stay with the whale."

Some half dozen of the men had already declared their intention of going.

Although so much had been accomplished, the mate was not ready to call it a day. He had decided to take a part of the food supplies and gasoline on ahead by sledge, and leave them at some point near a possible launching place. He called for volunteers to go with him while the rest slept.

After some hesitation, two men offered to go; and shortly afterward they set off with two sledge loads; the great mate in the lead hauling one sledge, and the two sailors following tugging at the other load.

SOME distance away, the mate turned and shouted back at the ship in his bull-like voice:

"Go to sleep, boys, and ask the mercy of Hell for wind!"

We did go to sleep; and were awakened some hours later by the voice of the returning mate.

"Get up," he bawled, "and load some more grub and some booch on the old slide wagon and get the sail ready."

He dropped into a bunk without even removing his mittens or boots, and in a moment was fast asleep.

Half an hour later his two volunteer helpers came trudging wearily in.

With his great strides, the mate had far outstripped them on the homeward journey, leaving them far in the rear.

We ate a hasty breakfast, and under the Captain's orders started to load the rest of the equipment on the boat; all except two sledge loads, which were to be transported separately.

Before the job was near completion, the mate was up and lending his great strength to the work in hand.

"I am giving you half the gasoline," said the Captain. "I think that is all you ought to try to carry."

"That's plenty," said the mate. "Anyway, we will throw in one of those 14-inch planks. I will make an oar that will bring us into Boston Harbor."

Every one was cheerful as the last preparations for departure were made. The wind was fresh and from the right direction; the sky was clear.

When all was ready, the captain and one man took stations in the boat to handle the sail, and we attempted to push off. But the iron runners were frozen to the ice and would not budge.

Bars were quickly brought and the runners pried loose. To everybody's relief the boat started to slide over the ice, the sail filled, and with a great shout from the men we were off.

At first the craft didn't seem very difficult to push. In fact, where the ice was hard and smooth the sail gave almost sufficient motive power.

For two hours all went well; nearly half the distance to the open rift had been covered, when we struck rougher going and our troubles began.

The narrow runners bit more deeply into the snow and ice; only by main strength could we make any progress.

As time passed and we labored on mile after mile, our strength began to fail; but we dared not stop for fear that the wind would die down, or that the weather would suddenly turn colder and close up the lane of open water.

To Open Water!

THE tireless mate was in the lead, with a rope attached to the bow of the boat. With this he guided the course of the craft, to avoid the rougher places and patches of deep snow.

Occasionally we would encounter an especially deep hole, or some unavoidable obstacle, and come to a dead stop from which we were unable to budge.

Then the leader would drop the rope and hurry back to help us push.

"Now all together," he would say. And putting his great shoulder to the load he would give a prodigious heave, and the boat would move forward.

Once we encountered a wide crevasse that was bridged over with a thin covering of ice and snow. One of the runners broke through and nearly capsized the boat.

Here we had to unload everything that could be unloaded and pry the runner up to get it again on firm footing.

Then, as we were within a mile of the open water, we came to a great pressure ridge of broken ice. As we drew near, it loomed across our path, a vast white barrier.

The now exhausted men were dismayed and disheartened at the sight, but the mate hastened to reassure them.

"Keep your tails up," he roared. "I will kick it over when we get there!"

We had two axes with us; one a huge blade with an extra long handle.

Snatching up the big axe the mate attacked the ice barrier with demonic frenzy that sent huge chunks of ice flying in all directions and cheered us on. Someone grabbed the other axe, and with bars and harpoons we all fell to.

After an hour's hard work, when much ice had been cleared away, the huge man halted and mopped the sweat from his forehead.

"We will chop away the worst of it," he said, "and then use a 'dead man' and the harpoon winch to pull us over the rest."

He detailed a couple of men to dig a deep hole in the level ice beyond the barrier and place the one plank for an anchor.

The boat's engine was tuned up, and the harpoon cable strung out to lend mechanical aid.

As the crew broke through the crest of the ridge the sight of water in the distance heartened them and they worked with renewed energy. When the worst of the ice was cleared away we prepared for the great effort.

Everything movable having been again removed from the boat, the harpoon cable was made fast to the "dead man" and the winch operated till the cable came taut.

WE took our places and began to push. With a roar the engine went into high speed, and in a wild scramble and rush we started up the incline.

We were almost at the crest when the engine gave a cough and died.

"You guys jump on the rope and I will push her over," shouted the mate.

We ran to the bow, and leaping into the air, caught the taut cable and teetered up and down on it in unison. Indomitable as his Viking ancestors, the Norseman bent his back to the load for a supreme effort.

The boat lurched forward and slid toboggan-wise down the hill.

The more than twenty hours of grueling toil were now forgotten, as we pulled and toted to bring the unloaded impedimenta and reload the boat.

As we set the sail and pressed on, we found the going good and were soon at the water's edge, where we halted and removed the sleigh runners in preparation for embarkation.

It was then that it dawned on me that the entire crew had elected to go, and that only the Captain, Willard and myself were to remain!

CHAPTER IV

An Owl!

WHEN the boat was finally in the water, and I saw all the men going aboard, I must admit that I felt like giving over my resolution and going along. But the boat was already heavily loaded; besides, was I to have less stamina than my assistant, and refuse to stick to our prize?

So the boat pulled out and left us, a forlorn, shivering little trio, standing on the ice gazing after it.

We saw the mate standing in the bow. He waved farewell with one of those enormous hands, and his great jovial voice came back over the waves.

"We don't know where we're going, but we're on our way," he called. We gave an answering shout and turned wearily back toward the ship.

The prospect of a long march in the face of a biting wind was very disheartening; but we bent our bodies forward and trudged on, mile after mile, silently and painfully; each of us busy with his own thoughts.

At last we gained the ship, and the rest of which we were in such desperate need.

We had nothing to do but settle down to wait; hoping that the little boat in some miraculous manner might survive the perils of the great ocean and eventually reach port, and report our predicament to those who might be able to aid us.

Then too we still had hope that some time this part of the

ocean might again become liquid as we had once seen it; in which case, although very shorthanded, we might be able to navigate the ship.

However, another long, dark winter was soon upon us; and we dropped back into our old habits until spring, or rather until the reappearance of the sun (for in that frozen region there was no season that by any stretch of the imagination could be called spring).

The light months came; bringing no sign of an ice break-up, nor of help from outside. We began to despair of the safety of our late shipmates.

As time wore on we eventually became very low-spirited; although we were in no immediate need of either food or fuel. We still had a goodly supply of coal, a large quantity of blubber and whale oil and also had a fair supply of groceries and tinned foods, and in our prize whale almost an inexhaustible supply of meat.

Even when the crew was still with us, we had burrowed into the vast cold storage carcass and taken out large quantities of the meat.

This meat we found surprisingly tender and palatable, considering the size of the great animal.

ONE bright day—it was now late summer—I was standing on deck, scanning the surrounding ice fields for signs of a rupture, when I saw a dark shadow skimming over the white surface. Manifestly it must be the shadow of a bird in flight; but at first I could see no bird.

I puzzled over that for a moment; then it dawned on me that it must be a perfectly white bird, and hence invisible against the white background.

Instantly I recalled how I had seen many little creatures in shallow tropical waters that were so nearly the color of the water itself as to be practically invisible. Then the bird in its flight rose above the horizon, and I saw clearly outlined a great Arctic owl.

Needless to say this was a great event; for I had been without sight of bird or beast for three years.

In great excitement I called to Willard and the Captain, who came hurrying up from the galley and when told of the presence of the bird joined in my excitement.

With straining eyes we followed the course of his flight until he settled low over a ridge in the far distance and disappeared.

Focussing the telescope on the spot where he had disappeared, we perceived that he had alighted; and was perched among some pressure-jumbled blocks of ice.

In spite of my companions' protests that the wary bird would see me and fly off when I was still far away, I determined to try to bag him.

Taking my gun and my dark glasses to ward off snow-blindness, I set out; actuated by the oldest of all human emotions, the instinct of the hunter.

So eager was I in my adventure that I paid little heed to the many treacherous crevasses that experience had taught me must intersect my path; and I was only brought to my proper senses by a bad fall and a narrow escape from tumbling into a deep, snow-bridged crack that would have meant total disaster.

Thoroughly frightened, but still intent on my purpose, I proceeded more circumspectly and on a circuitous route calculated to bring me close to the pressure ridge on which the bird was perched.

Cautiously I crept along among the larger pieces until I was but a hundred yards from the great bird.

Then I had the misfortune to stumble into plain sight. Instantly he spread his powerful wings and took to the air.

I hesitated only long enough to take careful aim and fired. To my delight, and I might almost say surprise—for owls are proverbially hard to kill—he came tumbling to earth

I ran up, prepared to dispatch him if necessary with another shot; but he was stone dead.

The Great Idea!

FROM the direction of the ship came the sound of two shots fired in rapid succession; indicating that Willard and the Captain had been observing my prowess.

I shouldered the bird with a greater sense of exhilaration than I had felt for a great many weeks, and started the homeward trek.

At first I walked quite rapidly, and with little effort; but I soon encountered some formidable crevasses, and was forced to make several detours. By the time I was half way back to the ship, I commenced to feel the strain occasioned by the hard going; and my decision to unload the bird and the gun for a short rest brings us back to the opening of this story.

I removed one glove and stroked the glossy feathers of the owl. How thick and smooth they seemed! That wonderful smoothness was like something I had felt years ago. A moment's reflection sufficed to recall—it was the smoothness of the rear end of the tote poles the Indians used when I was a boy on the Western plains. Many miles of sliding through the buffalo grass gave just that absolutely smooth polish. I remembered how cumbersome a load an Indian pony, or for the want of a pony an Indian squaw, could pull across the prairie.

"Well, here was a thought. Why not drag the great bird over the snow? With such an opportunity as this, there seemed no logical reason why I should carry him.

I remembered having a string in my pocket. I felt for it. Yes, it was there; a strong piece of fish cord. I brought it out and throwing one glove down to protect my knee from the snow, knelt beside the bird and proceeded to make a knot about his neck. Then, fearing that the cord would injure the feathers, I brought from an inner pocket a portion of a blue bandana handkerchief and inserted it under the cord.

How much, I wondered, could the live bird have carried on such a string while in flight. I thought of the weight that an airplane could carry; then of the load of a balloon.

Then, as little pictures sometimes float through the mind just before we go to sleep, I saw a long dirigible balloon in flight. It was close down to the horizon, scarce clearing the pressure ridges. It passed by a little cloud and emerged; but now it was not the form of a balloon, but that of a large whale!

With a start I strove to collect my senses. Surely, I was dreaming! Whales did not fly. Besides, I was not looking about me, but down at the great owl. Could it be that I was freezing, and dropping to sleep as men do when they are overcome by cold and fatigue?

Had I been unconscious of the passage of time and become chilled unawares?

I LEAPED to my feet, and swung my arms and beat my chest. I found I had no numbness in my hands or feet, and my limbs were not stiff.

Surely I must have been the victim of an hallucination. But why should I visualize a whale in flight above this expanse of ice and snow?

Well, perhaps I had been thinking a great deal about our giant whale, having little else to occupy my thoughts for many months. Besides, after several years of seeing nothing but this encircling vastness, one could not be expected to keep the old time grip on his mental reactions.

And yet, after all, I thought, as I put on my glove and made a hand loop in the string, a dirigible does very much resemble a whale. They are of much the same shape, and both have steering fins and tail flukes.

If only our giant were a dirigible, instead of a dead whale; how gladly would we sail back to God's country!

And then the important thing happened.

One eminent scientist has said that perhaps the greatest

miracle of all Nature's wonders is the birth of a thought.

"The whale would make a good balloon! Would it?"

I spoke half aloud, while my thoughts flew feverishly on to consider details of lifting gas, motive power, and navigating instruments.

Yes, it might really be possible. Here at last was hope! I was conscious of a great glow of excitement. My heart was beating furiously, and I felt the hot blood rushing up my neck to my brain.

I was spurred to action. The first thing was to tell my comrades about it.

I snatched up my gun and ran for the ship, trailing the owl behind me.

Presently I slowed down to a brisk walk; for I saw the ship in the distance, and on the deck I thought I could make out the forms of Willard and the Captain looking at me through the glasses. It struck me that I must present rather an incongruous spectacle.

What would they think of me, capering along and dragging the bird behind me? Would they think me demented?

Really, if they did it would be deuced awkward; especially since the idea which I had to propose to them was at best quite extraordinary. It would be an awkward situation indeed if they should become convinced that I was mentally deranged, and that my brilliant plan was only the ravings of a maniac.

I went back over the happenings of the last few days, scrutinizing my actions to see if there could have been anything about my conduct that could have seemed queer. Happily I could think of nothing out of the ordinary.

However, I resolved that I would not spring my idea upon them until any false impressions that they might have received should have had time to pass off

At least it would be best to wait a day or two and think it over, so as to prepare a logical presentation of the subject. In the meantime perhaps I could lead the talk to dirigibles and maybe suggest the thought without actually putting it into words.

I decided that the best course for the present would be to evince a great enthusiasm for my rare specimen of owl, and indulge in a bit of good humor and high spirits as a sort of celebration of my good luck.

CHAPTER V

The Launching of the Idea

TO my relief upon arriving I found both the Captain and Willard intensely interested in the bird; after laughing good-naturedly at my unique method of transportation, Willard, true to his naturalistic instincts, was interested in the catch as a specimen of the fauna of the far North. And the Captain was interested in its possibilities as fresh meat.

Willard and I set to work to remove the skin and portions of me to the taxidermist; while the Captain put the pot on to boil with a pinch of cooking soda in the water.

The following day as we sat at dinner, the conversation was about dirigible balloons. How high they could fly, how much wind they could stand, and so on.

"Do you know," I observed, "that the ideal shape for a balloon would be to copy the form of a whale? In fact, I believe that if they would cover a whale's body with balloon cloth, in order to get the pattern, and then take it off and insert the framework and divide it into several compartments they would have the most manageable craft possible to construct."

"How would it be to just inflate a whale with gas?" the Captain asked, laughing.

I did not laugh at the joke. I was observing Willard. His face lit with a fleeting smile. Then suddenly he became sober and preoccupied. He stared at his plate. He seemed to be swallowing with effort.

"Got a bone in your throat?" asked the Captain.

"No," said Willard at length, "but I was just thinking. There might be some sense to this idea of using a whale for a dirigible."

The Captain looked puzzled.

"You don't really mean that seriously, do you?" he queried.

"Well, why not?" said Willard. "We have a whaleskin for a bag; boat motors and gasoline for power, plenty of whalebone for the what-you-may-call-its—"

"I believe it's an idea! What do you think of it?" the Captain asked, looking at me.

"I have understood that a large quantity of gas was one of the prime essentials for balloon operation," I replied without any seeming enthusiasm.

The captain seemed not altogether incredulous. "You scientists ought to be able to make gas out of something on board," he observed.

And so the venture was launched. Not that we actually began work. But we began to study, to plan and experiment.

A FEW days later we went out with shovels and uncovered the portion of the whale's carcass that was above the ice, and took measurements to determine the cubic feet of gas space that could be made available.

Our deductions were quite satisfactory and encouraging. There was surely room for a tremendous volume of gas.

But the work of removing the whale's interior bulk seemed a task of such colossal proportions that the captain demurred. It would take the three of us years, working every day, to do that job, he argued.

"Well, how much is our time worth?" asked Willard; "so far as we know, we have nothing else of importance to do during the rest of our natural lives. And a job like this will at least give us something to occupy our minds, and perhaps preserve our sanity."

It was not the first time that one of us had spoken of the preservation of our mental equilibrium; and I felt that we were all more or less conscious that there was danger of our sharing the fate that often overtakes marooned sailors and explorers.

But the next thing to consider, before we let our hopes soar too high, was, could we find a way to produce hydrogen gas? We set to work in earnest to discover a way of producing the necessary gas.

Willard and I had had a vague notion from the first that by electrolysis of sea water something might be accomplished.

We had the dynamo for generating electricity for our lighting system, and for the motor to our high-speed winch; but our chemical equipment was discouragingly meagre.

Fortunately among Willard's books was one entitled, "The Chemistry of Industry." Here we found a short article on "Hydrogen from Electrolysis of Water."

From this we gathered that an electric current passed through a solution of water and salt, by the aid of a trace of some acid catalytic agent, such as hydrochloric acid, would produce hydrogen in generous amounts.

For our purpose it was necessary to have a large, U-shaped container, in order to get the proper circulation of the electric current; and this container had to be impervious to the acid used.

Willard and the Captain set about building such a container from sheets of metal carried in stock for repairing and renewing blubber reducing vats; insulating it with several coats of high grade varnish, which I had brought along for preserving specimens.

As for hydrochloric acid, we had recourse to the huge bottle that a fortunate error had bestowed upon us.

The Work Goes On

IN the meantime I proceeded to dig a well. I will venture to say that when it was completed it was the only well in

the ocean then in use.

Since the ice that forms on salt water is practically free from salt—containing only one fifth of the original salt—we knew that melting the ice so abundant all around us would not produce the brine we needed.

The ice was not so deep as I had anticipated; and at the end of the second day I had at our disposal a limitless supply of both salt and water, in a pukka well, all rigged with a windlass for hauling up buckets and a battering ram for breaking the ice as often as it formed on the surface of the water.

More than a month was consumed in perfecting apparatus and experimenting on the production of gas; but after much toil and many discouragements we finally succeeded in constructing a device which, although not very efficient, was capable of producing a small volume of hydrogen gas that would float improvised paper balloons.

And now we were ready for the great task of separating Mr. Whale from his skin.

It was decided to excavate the remainder of the flesh, blubber and bones, by a process of mining. Most of the blubber we intended to burn in our boilers to furnish power for the generator.

Fortunately we had a goodly supply of tools; and we set to work with a will. But we soon found that our muscles were soft, and we were in poor condition for such exhausting manual labor. However, since there were no time limits on our operations, we could work only a few hours a day; gradually increasing the length of our forenoon and afternoon shifts.

The method adopted was to leave a wall of several inches of the frozen blubber all around the outside, so that the surface would remain rigid until the major part of the material had been removed. Then to go over the entire surface again very carefully, removing all the blubber and leaving only the thin skin; putting in struts and props the while, so that the structure would not collapse with its own weight.

Before starting this last process we spent several weeks chopping the ice away from the carcass and introducing a layer of cinders and ashes beneath it, to prevent its adhering to its support.

The weeks lengthened into months while we were still engaged in this work. But as our muscles hardened and the project developed, our spirits improved; and we no longer scrutinized ourselves and each other for signs of dawning insanity. It was evident that the game was worth the candle, even though it might culminate in total failure.

THEN, after what seemed an age, the skin was empty; and the mouth and eye and other openings secured with paraffine-treated canvas. Fortunately the ship had been stocked with enough canvas for two new sets of sail, besides the ones in use. We used a large part of this canvas for a temporary shelter.

We decided to commence filling the "blimp" with gas at once; because we knew that the production of such an enormous amount of gas with our meagre facilities would be a long process; long enough no doubt to afford ample time to build our gondola, steering and propelling apparatus.

After a great deal of difficulty we succeeded in improvising a movable canvas partition with an air-inflated border, calculated to move along the interior of the huge creature, confining the gas on one side and expelling the air on the other.

Then we put the generator into operation. This plant was destined to stay in service night and day for weeks, producing gas slowly but steadily while we worked and while we slept.

We used our masts and most of the rope and wire on board to build a contraption to hold the great bag to earth after it was partly inflated but not yet ready for flight.

Then we constructed the lightest possible gondola; using the long strips of whalebone from the whale's mouth for braces and struts and canvas sails for sides and covering.

Next we took the light gasoline engine out of one of the little boats and rigged it to a hand-carved propellor made from a part of a mast.

By this time the bow of the whale was raised as high as its moorings would permit; and we installed the operating devices and hung the gondola beneath—all made from odds and ends from the ship. Our steering apparatus was especially primitive. It consisted simply of small wire cables running through pulleys and attached to the whale's fins by means of sheets of tin made from fruit containers laced to the fins with fish cord. These lines were operated by crude wooden levers, and were capable of moving the fins only a little way. Fortunately a whale's flukes are horizontal instead of vertical as fishes' tails are. The somewhat cumbersome device that we arranged was unable to move these a great deal, because of their lack of flexibility. But we could move them some, and we hoped sufficiently to enable us to at least partially govern our horizontal [illegible]

CHAPTER VI

The Whale Takes the Air!

I SAY we hoped; to hope was manifestly all we could do about the efficiency of our improvised equipment.

Obviously there could be no trial flights. When once we left our icebound whaling ship our only hope would be in good luck and a kind Providence; for we had no landing gang to pull us to a mooring mast, and no hangar in which to make alterations or repairs.

We did indeed have a valve in the gas compartment, made from a pump-sucker, with which we might contrive to let ourselves down. But we knew we would be able to carry practically no ballast. If our calculations, taken from the industrial chemistry book were right, it would be enough if we could lift ourselves and a small supply of gasoline and provisions.

We were now in high spirits; for it was daily becoming more evident that our balloon was going to at least rise from the ground.

When all the major devices were installed, we could see that it would still be quite a number of days before the gas bag was filled to capacity. So while the Captain was busy installing his compass and other navigating instruments Willard and I were occupied in painting the name of our dirigible, *The Great Whale* in huge letters on a great canvas banner. This we intended to unfurl as soon as we were really on our way—if and when it happened.

Then we declared a holiday, and held a formal christening. There remained but three bottles of wine in the ship's medical stores, and we emptied one of these, and ceremoniously broke the bottle over the new ship. Every one present seemed satisfied with this arrangement.

Midsummer was now approaching; and we set the 23rd of July for our departure; provided of course that our supply of gas was then adequate, and the wind favorable.

The Captain completed his log, and we all wrote letters to friends and relatives to be left at the ship. For we hoped that some time airmen or explorers might find the deserted hulk and carry our communications back to civilization, even if we ourselves never arrived.

I also prepared a report to the museum; describing our whale, giving measurements and other scientific data that I thought would be of interest to naturalists.

The morning of July 23rd was disappointing. There was little wind; and our smoke indicated further that it was in the wrong direction, traveling toward the Pole.

But as the morning wore on, the breeze died entirely; and at about eleven o'clock a light breeze started from the opposite direction.

Of course we had no means of observing in which direction the currents were moving in the upper air; but we decided to take a chance.

We descended to the galley and ate a hasty lunch; stowed a generous basket of cooked food and an emergency kit in the gondola, and prepared to cast off.

There were a few moments of dramatic suspense as one by one we pulled the lines that untied the slip-knots that held the bag to earth.

At last one large rope made fast to the gondola and attached to an iron pin in the ice was all that held us to terra firma.

"Well, here's to a prosperous voyage," said the Captain grimly; and leaning over with his long knife he cut the rope.

With a wild lurch the buoyant craft lifted far above the old whaling vessel.

But evidently we had made a mistake in locating our gondola. It was so far forward that the bow end of the whale was depressed, and the tail flaunted high in air.

"I hope the old fool isn't getting ready to sound," said the Captain.

"Maybe she will do better when we get the propeller going," said Willard.

To our great satisfaction we continued to rise until we were perhaps three or four hundred feet in the air, and then commenced drifting, broadside to the wind.

"Well, let's see if we can navigate her," said the Captain. And Willard, who now styled himself chief engineer, started the tiny engine.

As the propeller developed speed we commenced to turn tail to the wind and the forward end rose until we were almost on an even keel. Needless to say we were now in jubilant mood.

"The next stop," said Willard, "will be in the sunny South."

The wind now appeared to be very much stronger. Whether this was due to a rising wind or to our increased altitude we were undecided. We were still rising, although at what rate we had no means of ascertaining. We found however, that we were able to deviate about fifteen degrees from our normal course.

Southward Bound!

THE horizontal manipulations were not so good; but by putting the lever hard over we could observe a very perceptible change in the horizontal level of the craft.

We decided to set the tail flukes at such an angle as to prevent our being carried any higher, because it was becoming very cold. Besides, we knew in which direction the wind was blowing at this level, and we didn't want to take a chance of encountering adverse currents in the upper levels.

We at length succeeded in stabilizing our course at what we judged to be an elevation of about a quarter of a mile.

But the wind continued to rise. It whistled shrilly through our rigging; and we began to fear that it would become so strong as to batter our hand-made craft to pieces.

We had no idea how much pressure our thin, fibreless gas bag would stand without buckling. We did know, however, that keeping tail to the wind would minimize this pressure; and we urged Willard to keep the little engine going full speed, in spite of the fact that our supply of gasoline was very limited.

For several hours the character of the seascape was unchanged; but at length the Captain, searching the horizon with his glasses, announced that he could see land far ahead and away to the right of our course.

Very shortly we made out some low mountain peaks, and later the outlines of a small island.

As we passed a few miles to the east of this island, we saw that it was snowclad and desolate. But at least it was land; and it looked good to us for we had not had a sight of land for more than three years.

After eating a very cold supper from our lunch basket we decided to divide the time into watches of four hours each; one sleeping while the others took care of the ship.

For the next couple of days and nights I had little memory of the passage of time. I do remember, however, seeing the sun sink out of sight, indicating that we had crossed the Arctic circle; and I remember waking after a troubled sleep to find our balloon was passing over land; cold and barren land, blotched with patches of snow.

Willard had stopped the engine to save fuel, since the wind had diminished enough to materially lessen the danger of wreck. The temperature was quite noticeably rising.

"If this wind keeps on another day," said the Captain after making some observations and figures, "we ought to be approaching the good old U. S. A!"

"I suspect that this is an unexplored portion of northern Canada. I think I saw some trees a few miles back."

THEN early one morning Willard aroused me from sleep. He was in a state of great excitement.

"We are coming to a city," he shouted. "Get up! Quick! We are going to try to make a landing!"

I jumped up and looked out. The sun had just risen; and all beneath was flooded with golden light, intermingled with long dark shadows.

And we were indeed approaching a city! A city beside a shining river; all resplendent in the morning sun. The river was dotted with shipping; boats of all descriptions from mere fishing smacks and tugs to ocean liners; and it was spanned by tall and massive bridges. At the shore line were long docks, tall warehouses and grain elevators.

The principal part of the city seemed to cling to a precipitous hill which rose grandly from the water's edge. And the summit of this hill was crowned with a tall and splendid building that dominated the whole landscape.

"Do you know where we are?" asked Willard.

"Yes"; I responded joyfully; "there can be no doubt about it. We are coming to Quebec!"

"There is but one such city in the world!"

After our long exile, this was indeed a wonderful sight to our eyes; and all of us were as enraptured as though we were gazing at an enchanted world.

"We must watch out for a suitable place, and try to make a landing," said the Captain at length, pulling himself together with a visible effort.

"No doubt our craft has been sighted, and news of our coming broadcast."

"Perhaps they even know we are from the *Mauvais*. I wish we had the morning paper. They must be able to see our big banner by now," said Willard as he took the glasses.

"I can see people looking at us with telescopes; and here comes an airplane to meet us."

As he spoke we saw a biplane making a beeline in our direction.

"We ought to land, long enough to get some more gas and some sandwiches, and wire the museum at Washington to open wide the front doors; for the largest whale they ever saw is going to sail right in," said Willard laughingly.

"Yes," said the Captain; "and I shall send a wire to a certain Mrs. Captain Baker of New Bedford, Massachusetts."

As the airplane came near we saw a cameraman climb out on the fuselage and frantically grind off pictures of us. The plane passed close enough to exchange greetings, and then wheeled and sped back the way it had come.

Several shots were fired from the roof of the dominating building; and through the glasses we could see a considerable crowd of people gathering

"I think they are signalling us to try and land at that building," said Captain Baker; "and I reckon that high flagpole wouldn't make a bad mooring mast."

"A little to starboard, helmsman!"

Fortunately there was little wind, and the engine was func-

(*Continued on page* 1037)

Women With Wings

by Leslie F. Stone

(Illustration by Leonard)

Before the Venusian ship could gain the clouds a blue beam from the *Meteor* had caught it and it fell to the water with a mighty splash.

WOMEN WITH WINGS

A Sequel to "Men With Wings"

"GENTLEMEN," began the Mentor, as he faced the nine terrestrial leaders, "I realize that you are very curious to know why I have called you together without acquainting you with what I wish to discuss. Yet I am certain that each of you has already guessed the purpose of this conference!"

There were murmurs of assent from the nine men seated around the table.

"For a long time," went on the Mentor, "our medical men have been seeking to fight the menace that is threatening to depopulate our world of its women. Ever since the inception of the Winged Race, in fact, Science has been trying to save the women who so valiantly carry on the tremendous task of bringing young into the world. For, as you know, at least five in every ten die in giving birth to our winged children.

"Thus man has been able to improve upon Nature in one way, only to fall down in another, for she has struck down our mothers with a terrible unknown malady that attacks them in childbirth. You know of our continued efforts to discover what this strange disease is and to find some cure. Gentlemen, our earth is being depopulated of its women! President Adul! How many adult women are recorded living in your protectorate?" The Mentor was addressing the representative from Africa, a Negro.

"At the present time, Mentor, they number no more than one hundred thousand against five million adult males. Of females who have not yet reached their maturity there are but two million against the forty-odd million young males!"

"I see . . . and gentlemen, that is among a race of people who have heretofore proven themselves extremely hardy, with only three deaths out of ten women who go through childbirth!"

THE Mentor was silent for several moments as he considered these facts. He turned to the Eastern European, a member of the Old World Germanic strains. "President Müller, how many adult women do you report living?"

"In all our territory, sir, there are but fifty thousand, against two million adult males. Of unwed females we have but six million!"

"And of young males?"

"We have forty-seven million."

"Your death rate among the women is appalling. Your male population also has decreased."

Müller nodded and his eyes were grave. "Last year eight of every ten women died, although our physicians fought diligently to save them. And many of the babies also died, thousands. . . ."

One by one the Mentor called upon the other presidents to make their reports and each had practically the same fearful facts to relate. After the last had spoken the Mentor sat in his straight backless chair without speaking. The others were also wrapped in their own dreary thoughts.

Had there been a man of the twentieth century present he would have been more than astounded by the facts divulged by this meeting. He could not have understood! And he would have been vastly surprised to learn of the many changes that had taken place in the map of the world during the ten centuries that had slipped by. In his day it might, indeed, have been possible to foresee that the United States of America would one day include the entire North American continent, together with the islands of the South Seas, and that the numerous nations of Latin America would be fused in one.

It would also have been conceivable to him that England would gain jurisdiction over one half of Europe and Germany over the other half; that Arabia would swallow all of Asia Minor, Turkey and Egypt; the African Negro would come into his own and, with the exception of Egypt, control all of the Dark Continent; that the Hindu of India would have possession of all of southern Asia; China would control Siberia, Manchuria, Korea and Japan, while Australia and New Zealand would join hands as an independent state.

LESLIE F. STONE

The Coming of Wings

BUT our early-twentieth-century man might well have raised his brows upon hearing that all these great nations now owed their allegiance to the greater office of the Mentor or Planet Ruler whom the nine lesser potentates elected from their own number, and who ruled from the Great Palace at Havana, Cuba, where their conference was now taking place. And what would have surprised him most of all was the remarkable physical change that had come over the inhabitants of the world, as the appearance of these ten men, with their strange problems bore witness . . . and the source of his wonder would have lain in the fact that they possessed natural wings, great, powerful, living wings—more powerful than the wings of the eagle!

To understand how Mankind had come into the heritage of wings one must turn back the yellowed pages of history, to the sixteenth century* to one Howard Mentor, who with his science made wings possible to man. One can thrill anew on reading the history of the centuries in the Brazilian wilds when the little race of Mentorites struggled to put wings upon their offspring, and fought off the great nations of the earth who sought to punish them for their abduction of women. It will be recalled that the Mentorites stole unwinged women that they might continue to breed an *elated*** race. Schoolchildren know the date when Horace Mentor, descendent of the original Mentor, faced the World Court that existed at that time and demanded that his nation be given recognition by the World, since the winged people had without a doubt proved their superiority over the other nations. And he won his point. It was a great day for the planet when the Mentorites were given that sanction and when America opened her arms to them and even gave permission for the Mentorites to breed wings upon her citizenry.

And so with the years the world acknowledged that wings had proved more efficient than

TO those who read Miss Stone's "Men With Wings" in the July, 1929, issue of this magazine, we can offer another treat in the present sequel.

There are few of us who do not envy the birds in their power to soar above the earth and feel the freedom from the shackles that have held us perennially to the earth's surface. Miss Stone, as usual, shows her ability to write in a very human and interesting fashion, and constantly intrigues our interest by newer and more strange developments. In this story of terrestrial and interplanetary adventures we meet some of the problems that confront the winged people; and we see how Miss Stone works out in an amazingly surprising fashion the ultimate solution.

We offer this story as a worthy sequel to the marvelous "Men With Wings."

* See "Men With Wings" by Leslie Stone, July, 1929, issue of AMAZING STORIES.

** Winged.

The Original Story, "Men With Wings," was published in the July, 1929, issue of this magazine. Back copies are available at twenty-five cents each.

flying-machines with their smell of burning oils and their clattering noise and awkwardness of maneuver as well as the hazards of their construction. One after another America had conquered her fellow-nations with her hordes of winged men, with her electro-thunderbolts and aero-electrovoid machines,* until the time came when she could have possessed the Earth. Wisely, however, she refrained from enforcing such sovereignty, contenting herself with enabling her fellow-beings to grow wings. And over them all she established her protectorate, claiming only the right to interfere in their control when it meant a disrupting of the world's peace. But men with wings are a peaceable people, little given to wars or rebellion. When Man is enabled to fly like a bird into the sky, he is little troubled with the narrow, selfish outlook of the grubbing worm. Some of the great wonder and peace of the Universe, the beauty of the horizon, is instilled in his soul and he knows that *progress* and *brotherhood* are so interwoven as to become one!

THE peace and contentment that now belonged to the Earthlings was evident in the faces of the ten gathered for conference. Color was of no consequence to these broad-visioned men who, as representatives of the various races of Earth, bespoke the new understanding of this great truth. The Mentor (the Planet Ruler assumed this title and name on taking office) was a man of some fifty years, as fine a figure of a man as could be found upon the planet. His hair was as crisp as a youth's and his eyes were dark wells of understanding. His face was the face of a leader, but his leadership was tempered with a compassion for those he ruled. He stood a few inches over six feet and the great wings that rose from between his shoulder-blades had a span, when open, of twenty feet; for with the centuries the wings of the *alated* had grown in size. Those of the Mentor were covered with golden-brown feathers that were soft and silky to the touch. His clothing was close-fitting, the garments affording a minimum of resistance to the wind, and to lessen that resistance still more they were made of a sleek silky material. In color they were tinted a delicate shade of yellow that blended well with the golden-brown of the wings.

The other men at his table differed but little from the Mentor. Their wings, it is true, were of a variety of colors—some solidly hued, some variegated—and their clothing usually was pigmented to correspond to the wing coloring, for the winged people liked harmony of color, learned, as it were, from Nature's carefully manipulated brush. The only radical difference to be noted in the group was their racial colorings, and each one was the finest specimen of his own race. Their faces were usually very regular in contour, for with the knowledge that it is possible to grow new parts upon their bodies had come the knowledge of perfecting their physical features, until, except in color, they were almost counterparts of one another. Gone was the racial flatness of the Chinese face and its bland inscrutable eyes, while the Negro had as regular, clear-cut features as the Englishman who sat beside him.

They Must Be Saved!

NOW the Patriarch was speaking again.

"Something must be done immediately about our women, my friends, else we shall find ourselves a doomed race. It means race suicide to continue as we are."

"There has been talk, Mentor, of sending out an expedition to other planets in search of more women!" President Chang of the Chinese Empire said, slowly.

The Mentor looked up sharply. "Even were that possible, sir," are we marauders?"

"This is not a time for ethics, Mentor. The first of the *alated* did not balk at stealing women so that they could continue to propagate the race!"

"That is true enough, but still we cannot tolerate such a procedure. And after all, that is but half a solution. Our women—our sisters, our mothers, our wives—are dying! It is our individual women as well as our race that we must save!"

"Have you a solution, sir, that you summoned us to hear?"

Slowly and sorrowfully the Mentor shook his head. "The only solution that I can see is one that should not be considered except in the most extreme circumstances. Yet, it may be that the time has come when we must admit that course. I called you here today with the hope that some one of you may have a plan, or else that you will signify your willingness for us to go on with the program I am forced to lay before you. It is nothing less than removal of the wings from the backs of your peoples! For I am convinced that the disease that attacks our women came with the winging of the race. In this way we may hope to save these millions of women who will go inevitably to their deaths. For although a mother may escape with one child, statistics prove that either the second, third, fourth or fifth child invariably brings her to her death! We have tried every other means we know, but every experiment proves a failure!"

"I am certain that the answer lies rather in our seeking women from one of the known inhabited planets, Mentor," insisted the Chinese president.

Again the Mentor shook his head. "You may be correct, President Chang, but even if you were right, where is the means of our crossing space to another planet? True, attempts have been made, but each invention has proven impractical!"

CHANG smiled. "In Japan there is a group of men who tell us that they have perfected such a machine, sir!"

The Mentor jerked to alertness. "What do you mean? Why have I not been informed of this?" His eyes blazed, for although the protectorate was not severe with the nations, the planet ruler must needs know all the events worthy of note without fail. For only in that manner was it possible to keep the world balanced, and to administer to one nation as to another, so that jealousies and antipathies might not be given encouragement.

"The reports have been duly submitted at Havana, Mentor. Even now they probably repose in your files. We have been surprised that no word was received from you concerning this great discovery, for we only await your permission to begin work on the astralnautic flyer. That you were not informed points to negligence on the part of your secretaries."

"It shall be looked into immediately, President Chang, and the person whose duty it was to acquaint me with this momentous matter shall suffer for his carelessness."

"'A slovenly clerk is a menace to a well-ordered office,'" quoted the Chinese.

The Mentor nodded and wrote some words upon the autographic pad at his side that would convey his message instantaneously to the proper office.

"And now, gentlemen, have you any suggestions to make concerning our great problem? For us to set about de-winging our future generations is a drastic step, and I realize that none of you wish to place your sanction on it if there is hope that our dilemma may be solved in some other manner. Have you any suggestions?"

When there was no reply the conference turned to other affairs. Then an attendent appeared at the door to announce that it was the hour of the mid-day meal. The Mentor led the way from the conference room to one of the open shafts that were set at intervals throughout the Governmental Building. These shafts were fully fifty feet square and reached from the ground level to the open sky above. Doorways pierced the shafts upon all sides opening off every floor of the building. Before the advent of wings, men had used mechanical lifts to

* Machines that created a vacuum in the air, into which enemy craft were drawn by suction.

take them from level to level, but the *aloted* ascended or descended upon their own power. One by one the ten stepped from the doorway and with outstretched wings lifted themselves to the broad roof above.

CHAPTER II

Atop the City

UPON the roof were tables set under wide awnings with large mechanical fans beating the air to keep it refreshingly cool. A number of tables were already occupied by diners who rose from their seats at the approach of the ten terrestrial leaders and seated themselves again when the official party had taken its places at the large table set for them. Under another awning half a dozen musicians were playing upon various musical instruments, filling the languid midday air of Havana with their sweet notes.

Havana was scarcely different from the city of the twentieth century except that it was now larger and more beautiful. From the parapet of the roof could be seen the lovely city below, like a jewel in the setting that nature herself had created, the harbor scintillating and iridescent under the noonday sun, the gleam of its facets flashing with every underlying movement of the water. Overhead was the cerulean blue of the sky, forming an infinite domed roof. And to the beauty of the city with its houses of many hues and its palm-lined streets was added the flash of wings of every color of the rainbow as the flying people moved about on their matters of business, mostly keeping to the traffic lanes, but once and again taking a flight toward the sun for the pure joy of living.

THE Mentor's party was served by efficient servants with delicately prepared foods and a great variety of the fruits for which the tropics are noted. For an hour or so they sat upon the roof listening to the music of the trained players. And all over the globe Earthlings were listening to the same music, if such was their wish, through the radio sets. Or they could switch on their Visual-screens and see their leaders sitting together. The world was aware that the ten were gathered here together, and were anxiously awaiting some portent of good news.

Now in the sky there were hundreds of people who sought to catch a glimpse of their leaders. The manner in which they satisfied their curiosity was not trying to the potentates, for the flying people did not ogle, but flew quietly by. Some dropped flowers on the roof's tiled floor and the awnings as they passed, but these attentions were paid in a discreet manner.

As the sun climbed higher and higher, the fans were not enough to prevent the air under the awnings from becoming warm; so after their meal was over the Mentor suggested that they descend to the garden below. Descent was made down the shaft by which they had arrived. During a rain a glass roof slid across the shaft top to protect those moving from floor to floor, but at other times the shafts were open to the sky, for the winged people more often left their buildings by way of these shafts than through the doorway on the ground floors. The full length windows of the chambers were also used for exits and entrances. In the private buildings and homes the same features existed, and the old Spanish type of building with its inner *patio* open to the sky was well suited to the flying people.

Thus the party dropped the five floors and emerged into a cool garden shaded by a movable roof. There they sat for several hours discussing questions that had come up in their various domains. At four they left the governmental building for the beautiful one-floored home of the Mentor where they took a *siesta*. There they met the beautiful mate of the Mentor, his three sons and one daughter. The family name of the planet ruler was Page, although in his official capacity he was known as "the Mentor."

There were no other women in the home beside the wife and daughter. Nor were there any other servants than the mechanical robots that had been perfected to such a high degree of efficiency that the care of the house and the kitchen was left to them. The housewife had only to set their dials for the prescribed task and knew it would be carried out far better than any human servant could do it.

That evening, after the dinner in the Mentor's well appointed home, they listened to a program of music, then watched some dancing and a drama that was being enacted at one of the great radio broadcasting stations of the world. Needless to say, for two centuries now a universal tongue had been adopted and was spoken all over the world.

The following morning the Mentor's nine guests bade him farewell and with the coming of the sun were ready to return to their own capitals. This was to be accomplished by wing and one by one the presidents, each accompanied by his personal retinue, departed either for the East, the West, the North or the South.

There were thousands of the winged people abroad at that early hour, for they were early risers, and with flowers and songs saw the departing administrators on their way into the heavens.

The Space-Flyer

AN hour later the Mentor was again in his office, and before him was spread the report of the invention of the Japanese scientists. Already the clerk who had been at fault in not informing the Mentor of its arrival had been demoted. After studying the plans the Mentor gave an order to have himself put in touch with the inventors of the interplanetary machine. Over a private radio hook-up, he spoke for an hour or so to the two men whose brains had conceived the stupendous work. Shortly thereafter, the two were in the air on their way to Havana where they were to confer with the Mentor upon the possible construction of the flyer.

In the meantime the Mentor had brought together a half dozen renowned engineers to study the diagrams. And after many hours spent in a study of the plans they admitted that such a machine was theoretically feasible.

Flying, as the Japanese did, at one hundred and fifty miles per hour, it would take them a little over sixty hours to reach Havana. They carried food and drink with them but descended at way stations to rest and refresh themselves. From childhood the winged people were taught endurance in flight, and a youth did not come to manhood until he had made a single sustained journey of at least three thousand miles. The muscles of the back and wing-cases were carefully developed, so that their owners would not become knotty and muscle-bound nor give out under the long strain of enforced flights. In the beginning the winged men might have perfected the flying-machines along with their wings, but their leaders had been wise in realizing that the wings would deteriorate if the machines were to be depended upon, and history has proved time and time again that men who placed their dependence upon artificial mechanisms were apt to become physically decadent. The winged people of Earth could never be called that.

ON arriving in Havana, the two Japanese, San Tu Ackwa and Yoto Murca, went to one of the city's beautiful hotels where they took a few hours of rest before presenting themselves to the Mentor. Unselfishly the two scientists had given themselves for many years to the perfection of a machine designed to release their fellow-men from the gravitational shackles of Earth and allow them to soar into the great void, to extend their conquest of space still more. They had no thought for monetary reward, for gold as a means of barter and wealth had gone out of existence. Instead, their names

would go down in history, as benefactors of the race—men who had given the world a boon that was invaluable.

With them they had brought the model of their invention and set about to demonstrate it to the Mentor and the engineers he had gathered about him. The model was a perfect sphere made of the light and durable *dishonin*. Set as a girdle around it was a series of round mirrors, concave and convex. In the bottom of the sphere was the manhole for entrance, and from its top ran a vertical strip of quartz crystal that would serve as windows for the interplanetary travelers. By unscrewing bolts San Tu Ackwa exposed the inside of the globe. Here was a large wheel that almost entirely filled the sphere, but did not touch the sides of the globe. The wheel was suspended upon a hollow shaft that ran across between the two supporting walls of the sphere, and around its hub was a series of crystal openings.

San first explained the motive power of the flyer. He pointed out that within the hub of the strange wheel lay the motor mechanisms. For centuries now the Earthlings had been using the solar power machine in place of the old electric, fuel and water driven machines of the ancients. All power, as one knows, is derived from the solar rays that come across the ninety-three million miles of space between Earth and the sun. The ancients had had to depend upon wood, coal, oil and electricity to gather this force, but it had remained for the 30th century man to take that power directly from the sun itself. This was done by the heliogenerators, great mirrors that concentrated the heat-rays. Formerly man had to resort to steam engines, to utilize the heat to derive their power. But with the discovery of great deposits of radio-active ores in various parts of the world, the sun's energy was taken up and concentrated on the radium without the need of engines and by the release of energy a powerful rocket effect was obtained.

A Demonstration

IT was by this method that the Japanese had planned to propel their flyer. The girdle of mirrors would receive the sun's rays, and send it to the rotor housing within the sphere where the radium was located. The convex mirrors were provided to reverse this power, so that it would act as a brake for the machine, tossing off the heat generated by the concave mirrors, and by this intricate method of "cooling" bring the sphere to a halt.*

Now by setting the sphere in the sunlight that poured through the window, San Tu Ackwa, after switching on the rotor motors within, allowed them to generate power. A cable fastened to a small box with a keyboard on its surface showed how much power the motors were generating. When the dial showed a sufficient amount he touched one of the keys and controlled the movements of the sphere. It rose and moved about the room, circled their heads, went out the window to the length of its cord, then returned to the table top and alighted without a jar.

With that demonstration completed the inventor now proceded to point out the features of the wheel that were puzzling the Mentor and his engineers. Opening one section of the rim he showed the living quarters for the crew and interplanetary passengers. Series of spiral stairways joined the rim of the wheel to the hub with its machineries and engines. The spokes of the wheel that held the rim in place were hollow shafts whereby the passengers could fly to the hub. These shafts were also to carry the ventilation pipes as well as the water to the living quarters. In fact nothing seemed to have been forgotten for the comfort of the passengers, the heating and the refrigerating, the lighting, the sanitation measures, the radio and Visual apparatus. And every living-room, bed-room, dining-room and bathroom, as well as several kitchens, was as well equipped in miniature as it would be in life-size.

THE feature that was strangely striking, however, was that the living quarters were upon the rim of the wheel, the ceilings being toward the hub of the machine. Yoto Murca here took up the explanation. He demonstrated that inasmuch as in space there is no gravity, and gravity can be replaced only by some other force, they proposed to utilize centrifugal force for this purpose. To understand centrifugal force better it must be understood that whereas gravity operates *toward the center of mass* centrifugal force operates *away from the center.* Therefore, in the quarters set in the rim of the wheel which was to produce centrifugal force by rotating around the hub, that which is "up" means toward the axis, while "down" is *outward* from the center, the axis of rotation. It was calculated that if the wheel made one revolution in about 8 seconds with its diameter of 100 feet, a man would be pressed to the floor with the same force as he would be pressed normally to the surface of the Earth.

FOR hours the Mentor and the scientists discussed the machine. A few minor adjustments were suggested here and there, but on the whole it was agreed that the space-flyer was practical, and the Mentor gave the inventors the assurance that a trial ship would be constructed under their supervision at the far end of the island of Cuba, where the great experimental laboratories were located in which all the newest inventions were built and given trial. The following day the two Japanese left with a letter to the governor of the laboratories instructing him to place men and materials at their disposal. It would take many months to build the space-flyer, since casts would have to be built for its many intricate parts. And it would take even longer to completely fit it out as the Mentor directed. But his eyes were shining brightly as he bid San Tu Ackwa and Yoto Murca good day. He was happy in the realization that the Earthlings were to master another great field of science. However, no announcement would be given to the world until the space-flyer had proved itself.

CHAPTER III

The Mentor's Decision

IN his chambers now sat the Mentor alone. He was weary. For the days that had passed since the conference he had been working, accepting and rejecting new plans for the welfare of his people, and only now did he find himself with a few hours of leisure. But there was no rest for him. He was too much troubled with the momentous question at hand to be able to seek recreation. What was the world to do about its women? True, there were something like forty millions of young immature females in the world, thousands of whom were daily reaching the age where they would take upon themselves the duties of wifehood, only to succumb as their mothers had in that terrible hour. With each generation the problem grew, for nothing seemed possible to save the women. And what was the world to do when man should at last find himself without a single woman in his midst? True, the life span of the individual had been greatly lengthened by science. The seventy years of the ancients had been prolonged to two hundred, but in that alone was no solution.

The Mentor slowly turned to President Chang's suggestion concerning a raid upon another world for women. Astronomers knew that at least two of the planets sustained life, namely, Venus and Mars, and a number of the satellites of both Jupiter

* To better understand the amount of "heat" radiated by the sun it must first be known that the rate at which radiant energy of all wavelengths is received by the Earth from the Sun at the outer surface of our atmosphere when the sun is at its mean distance, is, in terms of mechanical work, 1.51 horse power per square yard. From this it can be seen that with a large number of great mirrors an immense concentration of energy could be obtained.

and Saturn were also known to be congenial to human life. And now with the invention of the space-flyer such a raid could eventually be made. But what if life upon these planets was different from our own? Perhaps Nature had not repeated herself and the beings of these other worlds were of a different species. And even if human life dwelt upon these worlds, the Mentor was still averse to engaging in wholesale kidnapping. To rob another world of its female population was to leave it in the same predicament as the Earth was now in. And how could the Earth's people, whose only religion was Brotherhood, willingly cause such a condition upon a sister planet? No, the Mentor decided, mankind would not consent to despoil others in an effort to save itself. Other measures must be used. Wearily he pushed the button that would bring a clerk to him. Fifteen minutes later, two of the most renowned members of the medical profession stood before him. These men had just come from the Medical Congress that had met to take up the studies of a Dr. Moore with regard to changing the present method of bringing children into the world.

"WHAT is the decision of the Congress?" asked the Mentor

"Sir, to do what he proposes will be a momentous step for us to take," answered one of the doctors. "Nature can not be changed in a day, and the time required to make the alterations Moore expects will be too long, for by that time thousands of our women must be sacrificed! For the sake of womanhood itself the Congress agrees that such a project should not be considered. It is too late for us to proceed upon such a course, although there is no doubt about its feasibility!" Doctor Horace Wilson sighed as he finished.

The Mentor nodded his head sadly. "And yet, doctor, something has to be done, as you well know. Is it possible for you to 'de-wing' our people as Mentor once winged us?"

Wilson nodded slowly, almost unwillingly. "It can be done, sir! Acting on your suggestion of several months previous I have had a number of my assistants experimenting on such a solution. They only await your commands to manufacture the serums in bulk!"

"It is not the solution that we want," sighed the Mentor, "but I know your department has done everything possible to save the lives of our women. Howard Mentor, of course, never dreamed of an unknown disease arising, when he set about to give us wings. Of course, we realize it will take generations for us to undo what he has done, but I wish you God's aid. Else we die!"

Here Doctor Herbert Morris, the second scientist, spoke. "I believe, Mentor, that it is wrong for us to turn to this means . . . yet. You know that for many years we have been working upon the possibilty of producing our young through mechanical agencies. Up to this time it is true we've had little success, but now I am beginning to see a glimmering of light. We have been working along the wrong lines, but at last results are beginning to show. If you will only consent to wait one more year I am certain that we can produce all the winged children required!"

"A YEAR is a long time, doctor, and our women die daily."

"I know that, sir, but if you will but give us that length of time I am positive we can save the rest as well as bring into being as many females as are needed to offset the present deficit. Of course when that is accomplished, it will mean that the duties of childbearing must afterward be left wholly to our machines, but in doing so we shall stabilize the number of men and women, and man will not be deprived of woman's companionship!"

"If we could be sure of success, doctor, I would gladly give my permission to continue your experiments before Dr. Wilson commences his task of removing the wings from our future race. The loss of our women is appalling!"

Morris nodded. He knew that only yesterday there had passed away the Mentor's own beautiful mate. The nations were grieving with their kindly leader.

It was then that Wilson spoke. "Sir," said he, "I think that my colleague is right. It were best that he be given that single year to accomplish his purpose. I have been in his laboratories and have seen the great progress he is making. In the meantime I would suggest that all women be sterilized temporarily!"

With that the Mentor's dark eyes brightened. "Well thought, doctor. Why has no one thought of such a respite sooner? Better we have no children, than to allow the women to die! Doctor Morris shall have his year, and before night the word will be sent around the World!" He smiled and held out his hand to Morris. "To your success, sir!" Then he was shaking hands with Doctor Wilson. That afternoon word went out that child-bearing was to be forbidden for a year's term.

CHAPTER IV

The Strange Visitor

IT was a week later that the Mentor was startled by a message that came to him from the Lick Astronomical Observatory upon the Pacific Coast. When its significance dawned on him he immediately took to the air with but a single attendant, his eldest son, Alvin Page. The world was surprised to hear of his sudden departure, for it was seldom that the planet ruler ever left the seat of government. For days now the Earthlings had been in a ferment. The edict forbidding the conception of young that had followed the meeting of the ten terrestrial leaders had left the populace restless and puzzled. Since they had known that the condition of the womanhood of the world was serious, it was natural that they should see in this unprecedented journey of the Mentor something concerning the matter at hand. However, the message requesting the Mentor's presence at Lick had had nothing to do with the affairs of the globe.

Its content was of far different purport. The observatory upon Mount Hamilton was by far the largest of its kind in the world, the lenses of the telescope measuring fifty feet across! And what the astronomers had sighted in them had been so strangely arresting that they had sent immediately for the planet ruler. For what had been seen was indubitably a man-made machine leaving the cloud-shrouded face of the planet Venus! And it was headed for Earth!

For three hours they had watched it before the planet ruler was appraised of the strange fact, though often it disappeared from their lenses, for it showed nothing more than a pencil streak of light out in the void. It was impossible to determine its shape, but there was no doubt that it was propelled by sentient beings. It was only by an accident, however, that it had been discovered at all by a student who had for the first time turned his eyes upon that distant planet. When the strange shape had swum into his vision he had called for a more learned astronomer. Photographs had instantly been taken and developed while others still peered at the moving flash of light that appeared to move slowly on its course.

VENUS with her all-enfolding shrouds has always been an enigma to Earth. Much has been written about her, but little is known. For although man with his great telescopes has been enabled to read the faces of the other planets clearly, Venus had continued to hide her secrets. Once or twice through the centuries a rift had been reported in the Venusian clouds and one astronomer had thought that he glimpsed a city upon the planet's surface, but he could never be certain. They did know, however, that the thick, vapory atmosphere differed but little from that of Earth, the clouds themselves acting as a

shield against the intense heat the sun radiated upon it. Mercury without this shield was an inferno upon its one surface always turned to the sun, while upon the opposite face that lay forever away from the great star the temperature dropped at times to absolute zero. Mars, on the other hand, was known to be inhabited, for the telescopic photographs marked a number of great structures and more than one queer craft had been seen moving through the dusty atmosphere of that world. On the satellite moon of the Earth, on the shores of the long dead seas, the ruins of wondrous cities had been discovered that bespoke a race of beings whose needs had been identical with that of the Earthlings. Why then should not the beautiful planet Venus that lay upon the Earth horizon have life thereon?

All day and night the Mentor and his son had flown across sea and lowlands, plateaux and mountains, and near dawn they came within sight of the towering dome of the observatory upon Mount Hamilton. Arriving on the broad roof just below the dome, they were met by a group of astronomers who without words led them directly to the telescope. In a few minutes they were staring at the long bright ship that now, as it neared Earth, could be recognized clearly as of cylindrical shape. One strange feature of the flyer lay in the fact that the sun's rays, that should have struck it obliquely as it hurtled on its way, were not being reflected but appeared instead to pass directly through it, as though the machine were half transparent!

Down to Earth!

"WITHOUT a doubt," observed Professor D'Arcy, governor of the observatory, "the Venusians are bent upon paying us a call, but whether it is to be a friendly visit or one for purposes of attack we have no way of telling. It is evident, however, that they are far more advanced than we of Earth, since they have succeeded in conquering the void. We have been trying to get in touch with them by means of the radio, but have so far failed."

"Ah, but you are wrong, Professor, in believing that Venus is superior to us in intellect," the Mentor remonstrated, "just because they have beaten us in the secret of interplanetary travel. True, they are the first to have sent out their ships, but not many months will elapse before an Earthly ship also will be launched into space!"

"You mean it is possible?"

Quickly the Mentor told of the invention of the Japanese and of the certainty that it would succeed. "Heretofore, our scientists have failed because of their misconceptions of what constitutes a space-flying machine, but though I have not announced the fact to the world, I am certain that the Japanese sphere will do all that its inventors claim. In fact, I have never been more certain of an untried experiment as I am of this. I will not hesitate to go up in it on the initial trip!"

"The principles propounded are sound, sir. Pray that it may be all that you expect, for not only will it widen the horizon of the Earthling, but perhaps some day our people will journey on across the great Outer Void to other Universes and Galaxies! And what's more, our scientists will no longer need to depend upon faulty telescopes to examine the world that lies beyond."

For many hours the watchers never left the telescopes as they studied the progress of the Venusian vessel. After careful computation it was estimated that the ship's speed was approximately 200 miles per second, and as Venus was then traveling toward her inferior conjunction and was something like 26,000,000 miles distant from Earth, it would take the space-flyer at least thirty-five hours to reach Earth. Already for more than thirty hours the scientists had watched her on her course. Another four hours and she would arrive! When or where the flyer would land upon Earth they had no way of knowing.

THE next few hours were feverish ones for the astronomers, for other observers had seen the Venusian machine and were in communication with one another. Then the broadcasting stations were sending the news in relays around the world and efforts were made to photograph it in the Tele-Visual screens. The observatories had announced that the ship was gradually slowing down. At ten o'clock, Pacific time, the ship was seen to enter the atmosphere, traveling at about three hundred miles an hour. Slowly it encircled the globe, dropping lower and lower until it could be seen by the naked eye. Twice more it swung around the globe before it dropped to an isolated spot along the Florida coast not many miles south of the old resort city of Miami. Immediately the Mentor dispatched an order that none should approach the stranger within a radius of two thousand feet, until it could be discovered whether the Venusians came as friends or foes. With D'Arcy, his son and a number of the scientists, the Mentor left Lick and headed for the Eastern seaboard.

They flew at top speed, for the Mentor was greatly worried about this strange circumstance. In his heart he feared that the arrival of the interplanetary machine boded no good for his world. And the Earthlings were unprepared for an attack, since their development was along unwarlike lines. The Mentor did not speak of his fears to his companions as they winged their way across the 3000 miles to the Eastern coast. Flying at 150 to 175 miles per hour they could not hope to reach Florida in less than nineteen or twenty hours. It was a long trip to take, flying so swiftly, and especially for the two members of the party who had already flown more than that distance not many hours before. Moreover, they were encountering head winds, and time was always lost in crossing the mighty mountain ranges of the west.

Disappeared!

WHEN the Venusian ship settled upon the sands, on an island that lay between the ocean and Biscayne Bay, there was a small group of flying men there to witness it. They were six guards whose duty it was to keep the great beacon light on the beach trimmed to guide night flyers out at sea, and also to patrol that part of the shores and sky in the event that a flyer who had overtaxed himself could not come down without aid. They had been listening intently to the broadcast from the observatories, and had kept a lookout for the space-flyer. It was they who told the world of its descent. And no sooner had they submitted their report than they deserted their posts, flying swiftly the mile and a half to where they had seen the stranger drop.

They were greatly astounded by its size, for it was fully two thousand feet in length. It lay on the golden sands without a sign of movement, its black polished body a blot of shadow. In wonder they stared down upon it, not knowing what course to take. Had they waited longer at their station they would have received the Mentor's command not to draw near, but now, after a moment's parley, they drew closer, alighting upon the sands. They stalked about the black cylinder at a safe distance and were surprised at not finding a visible entrance, for although its black exterior appeared to be of glass, it was so thick that the figures within could be seen only as through a haze. So engrossed was one fellow by this phenomenon, he approached the smooth wall and sought to see through it by shading his eyes with his hands. The others saw him suddenly turn and run, but he had not taken more than a dozen steps before he had thrown up his arms and dropped to the sands lifeless! Immediately the others took to wing, but not one escaped the invisible attack, for one by one they all dropped to the ground. The Venusians had spoken! It was War!

In twenty minutes or so a number of the winged people from Miami had arrived. They congratulated themselves that they were first upon the scene, for the sands surrounding the long black cylinder with its needle-sharp nose were empty of life.

CHAFING at the command of the Mentor not to approach closer than the two thousand feet, the dozen or so men flew about trying to discover what they could of the intruder. Still, for all its quietness, there was a feeling among the winged people that they were being stared at, and a malevolent spirit seemed to pervade the very air about the ship. More and more people were arriving on the scene and officials appeared, bringing men to police the circle, so that none would approach the Venusian ship at close hand. Occasionally a fellow or two would fly too near and be severely reprimanded by the government officials among them. Had they known of the "shooting" and subsequent disappearance of the Beacon guards there might have been demonstrations of violence from the crowds, but there was no sign of the six bodies. The crowds could only stare and gape at the dark shape with impatience. Why did it show no life? Why did not the travelers show themselves? What did they fear? Many opinions were passed as to what should be done. Some believed that a party should descend to the sands and signal to the Venusians. Others thought that attempts should be made to break into it. Something should be done! But they knew they were waiting for the planet ruler to arrive. Still why did not the Venusians themselves act? Did they really fear violence from the milling crowd?

Word was next received that President Trent of North America was on his way with a party of officials from Washington, and shortly after that report came a corps of radiomen from the broadcasting systems to set up apparatus to inform the world of what happened.

The crowds in the sky were continually increasing as the flying people came from miles around. The difficulty of the officials to keep them in place grew. The sand dunes of the bay were becoming literally covered by the people, who alighted for a few minutes before taking to the air again. The excitement that prevailed grew until the air was loud with the sound of the thousands of voices and the whirr of the powerful wings. Then, as the radio-corps had their apparatus ready, they commenced broadcasting, estimating that over fifteen thousand were gathered round about. The Tele-Visual shortly thereafter took the scene and the world saw the long cylinder crouching on the sands like a half-sleeping monster. Half the world had aroused itself from sleep to see that strange picture, and listened avidly to the words of the announcer as he conjectured about the people who were in the ship, who had crossed 26,000,000 miles of space, and yet seemed fearful of facing the crowds of their sister planet Earth.

Then, with a suddenness that was inexplicable, the voice ceased speaking and the scene was blotted simultaneously from the Visual screens all over the world. The broadcasting stations were besieged with queries demanding to know what was wrong. Station NN2 in Miami, which had been receiving the reports from the beach, frantically attempted to discover the cause for the cessation of the program, and announced that the trouble came not from them but from the apparatus on the bay. Flyers were being dispatched immediately from Miami to discover what had occurred.

CHAPTER V

Shadows in the Night

ALMOST an hour passed before the world received news again. It came from a reporter at Miami who had been the first to reach the interplanetary ship and return. He averred that although he had found the space-flyer in its place, exactly as it had been seen through the Visual screens, not a single soul of the fifteen thousand spectators who had gathered there could be found! It was as though they had disappeared completely from the face of the Earth! An examination of the radio-lay-out proved that it was completely dead, and the power-machines of the beacon station as well!

Consternation reigned upon the globe! Cries were coming in from all sides that an attack be made upon the visitor. Fear crept into many hearts.

The Mentor and his party flew faster and President Trent and his retinue also rushed to the scene. Several thousand other men hurried there too, but dared not approach within a mile of the now evidently sinister cylinder, but soared high above. From Jacksonville a contingent of men put out from the old arsenal with bundles of electro-thunderbolts, the ancient fire-arm that had not been used since the Third War, but which had been preserved merely as relics. These weapons were small cylindrical tubes about six inches in length and each contained six electric charges that sent a powerful charge of electricity a thousand feet. It was these thunderbolts that the Mentorites had used in 1945 to defeat the combined armies of the world. It was to be doubted that these simple little weapons could be of any use against the science of the Venusians.

The question was now: What had happened to those fifteen thousands? Had the Venusians murdered them and carried them thence into their ship? Or had they merely used a weapon that completely disintegrated flesh and bone? If the latter was the case, why should the Venusians seek to murder so wantonly? Surely they did not believe that in that way they could hope to conquer the globe? Facts pointed rather to their having used either a gas or an invisible ray that paralyzed the muscles, after which it had been a simple matter for them to carry their captives into their ship. That the motors of the radio and beacon station had been paralyzed also pointed to such a possibility. And fifteen thousand men could easily have been stored away in that great hulk. But why? What was the motive behind the act?

AN hour before sundown the American President and his party arrived on the scene, but he did not approach the space-machine. He ordered the electro-thunderbolts distributed among all those gathered, with directions to shoot down any of the invaders who might make any signs of violence. But he also realized the ineffectualness of those ancient arms against the black bulk of the cylinder. Then from Tampa arrived a dozen flyers carrying a number of heavy explosive bombs that they had pilfered from the museum in their city. They thought to drop the explosives upon the Venusian ship, but the officials forbade it. They were not sure that their brethren were not imprisoned in the ship, and to demolish it would mean the murdering of thousands of their own people. It was agreed that a decision was a matter for the Mentor, and they must await his arrival.

Night was descending, and with its coming bonfires were lighted upon the dunes, as the Earthlings continued their watch of the stranger in their midst. Experiment proved that the power station of the Beacon was again in working order, and the great beam was turned upon the huge, black, silent mass on the sands. Some of the watchers decided to return to their homes, but a thousand or so stayed to guard the ship during the night, although they were not certain as to what their watchfulness amounted to.

All went well until a little after midnight, when suddenly without warning the beacon light snapped off! Nor did a soul move upon the dunes. One or two men who had been in the air dropped to the ground and lay where they had fallen, not far from the black hulk. All were as quiet as the grave!

It was then that a curious sight could have been seen. From the Venusian ship dark shadows crept forth. There were perhaps a hundred of these shadows, and it was toward the water that they moved. One of their number leaned forward and lifted a bit of the salty brine to its lips, then gathered with its fellows in conference. Others tasted the water, then in one concerted rush they took to the air, arose with a little difficulty a hundred yards, hovered a minute or so, and then made a plunge into the darkened waters. What a pity the moon was

not shining! Only the presence of the minute phosphorescent particles that are present in great numbers in Floridian waters traced their course where they hit the water and their passage as they moved below the surface. Then they were rising again on their wings, to plunge once more into the depths. For an hour or so this performance continued, the creatures remaining under the water as long as fifteen minutes at a time. Then at last they rose into the air and turned to the land and their machine. Half an hour later, the long length of the great vessel climbed skyward with a low moaning hum. It showed no light as it climbed, and then it was gone into the darkness!

What Did It Mean?

WHEN the Mentor and his company wearily dropped upon the sands close to the spot where the Venusian craft had lain they were shocked to find nothing but the long depression in the sand to show where it had rested! And not far away was the mute witness to the scene that had passed, the radio outfit. Yet on either side for a mile in both directions lay sprawled in sleep a great number of the Earthlings. The blackened ashes of what had been bonfires occasionally sent up a curl of smoke, while not five hundred yards from the depression where the strange ship had lain was the figure of a man curled with one wing under him.

The new arrivals eyed one another, seeking an explanation in each other's faces. But none of them had any to offer. Alvin Page approached the figure on the sand and shook it. With a wide yawn the fellow awakened, and appeared astonished that he had been sleeping. Then he saw the Mentor's son, and looked about in wonder. He saw the depression and realized that the Venusian ship was gone. Sheepishly he got to his feet and found that his one wing was crippled, and as he approached the Mentor he was limping painfully. Trying to recollect what had befallen him he told simply all that he could remember . . . the splash of the light beam on the long machine, the bivouac of his fellows, the lighting of the fires and the preparations for night. He recalled that he had climbed high into the sky for a last look at the cylinder before settling for the night. Then a feeling of drowsiness had come over him, the terrible sensation of dropping and an inability to save himself. He was awakened only by Alvin's touch.

The others listened in silence.

D'Arcy was first to speak. "They have some damnable contrivance that paralyzes anything within its range. Strange that they should have captured the first fifteen thousand and leave another thousand or so sleeping. No doubt they were filled to capacity on the first haul!"

Page went to arouse President Trent whom the man with the crippled wing had remembered seeing on the left hand side of the clearing. One of the scientists of the Mentor's party examined the radio and found that it responded to his touch. At the planet ruler's direction the new discovery was broadcast while all observatories were directed to search the skies for the interplanetary machine. The Mentor feared that it might have gone to another more secluded spot on the globe, there to continue its damage, but an hour later reports came that the Venusian machine had been discovered out in the void headed for Venus!

PRESIDENT TRENT joined the Mentor. He was downcast over the fact that he had been found napping. He also told a story of a wave of drowsiness that had come over him. He was crestfallen that the Venusians had slipped away without any attempt on the part of the Americans to punish them. He was consoled by the thought that nothing could have been done, anyway.

For many minutes the men stood on the sands conjecturing as to what this visit of the people from their sister planet had meant. Why had they come at all? What was their purpose in capturing thousands of our people? For now it was regarded as certain that the ship had purposely borne away fifteen thousand captives.

"Can it mean," queried Trent, "that they are faced with starvation . . . or that they were in need of slaves . . . ?"

D'Arcy shook his head. "People who are advanced in science as the Venusians appear to be would be able to provide themselves with synthetic food, and slaves are not necessary when people have a working knowledge of mechanics!"

"What is your opinion, then?" asked the Mentor.

"Perhaps they are faced with the same problem as we . . . the dying of our women!" replied D'Arcy.

"Yet the party was mostly men. I doubt there were a hundred women in the lot," said Trent.

The Professor nodded. "Perhaps they want to study our species in order to see whether they can come to live here."

"You believe that a race of scientists accomplished this thing?"

"Why not?"

The Mentor nodded. "I have been drawing the same conclusions. But it is horrible! We can not allow it. Why, they may even return for more!"

"And President Chang would have it that we were to do the same thing, to abduct women from another world!" observed President Trent with a light in his eyes.

"Last night, sir," said D'Arcy, "you were telling us of an interplanetary machine now in construction. Is it not possible now for us to follow the Venusians and force them to return our own to us? Ethics no longer counts. And we need women!"

The Coming of *The Mentor*

THE Mentor's face lighted up. "Ah, you are right, Professor, but we must hurry. As it stands now, it will take many months to finish the machine. And to war upon Venus we will need more than one machine! That will delay us still longer, for I will not order the construction of more flyers until the first proves its worth! It will take many months before we go to Venus to reclaim our own!" He sighed and turned to join the others, but as he did so he reeled and would have fallen had not D'Arcy caught his arm. He saw then how grey and weary all were who had flown from Lick, and with a wan smile he noted that they needed sleep. President Trent pointed to the Beacon station and advised that they retire there for several hours. In the meantime he would attend to such affairs as required the planet ruler's attention.

It was necessary for the Mentor and his son to be supported as they made their way to the haven. There they found a dozen or so recumbent forms stretched in different positions just as they had been when the light of the beam had been extinguished by the Venusians. No one had thought to arouse them sooner. They were astonished to learn what had happened. They helped to make the Mentor and his party comfortable in the dormitory on the second level of the building. But before dropping to sleep, the Mentor directed that the corps of men at work upon the interplanetary machine be doubled. Then in a moment he was asleep. A few hours of sleep sufficed him, however, and again he took to the air, this time headed for Cuba.

The following day Professor D'Arcy's views concerning the Venusian expedition were broadcast, together with the news that the Earthlings would shortly proceed to Venus to aid their kidnapped brethren. The thought that the fifteen thousand were alive heartened all and in the days that followed there came thousands of applications from over all the world asking permission to take part in the expedition to Venus. The laboratories reported that they needed at least three more months before the space-flyer could be finished, although work was being rushed day and night.

OTHER preparations were also being made, and from the long closed files of formulas and blueprints of past inven-

tions, weapons of warfare were being carefully studied by a group of engineers who were to decide what means would prove most effective against the vandals of Venus. So long had the planet been at peace that little thought had been given to defensive or offensive armament. With her thunderbolts and her nero-electrovoid machines which had created a vacuum in the atmosphere and thus drawn down the planes of the enemy, America had centuries before conquered the world. But these things had been so long forgotten that the Mentor was surprised to learn that so many infernal weapons had been conceived by man, that such blood-thirsty strains had existed in previous generations.

The day came when the first interplanetary flyer was completed and the world rejoiced. With its launching, the machine was duly christened *The Mentor*. San Tu Ackwa and Yoto Murca, the inventors, were to command the ship, and at least thirty mechanical engineers, astronomers and scientists were to accompany it upon its maiden trip. Wistfully the planet ruler watched *The Mentor* as it took to the air after its great helio-generators had absorbed great quantities of the sun's rays. As he had told D'Arcy at the Lick Observatory, he had intended to be a passenger on the initial trip of the machine, but the peoples of the world had cried out against the risking of his life in the undertaking.

He had to be content instead with watching its progress through the Visual screens as *The Mentor* emerged from the Earth's blanket into the darkness of the void. The whole world watched its progress with bated breaths. Its first stop was the Moon, where it was seen to land, upon the wide plain of the Sea of Serenity. The travelers made no attempt to disembark upon that desolate world, since they were unprepared to cope with its conditions. From the plain it moved eastward, viewing the awful grandeur of that dead world. All through the journey *The Mentor* attempted to keep in communication with Earth, but it was almost impossible. There appeared to be "dead spots" in the void which refused to carry the radio waves. But occasionally word came through. From the Moon they headed back toward Earth, encircled her and then slowly returned to the flyer's billet....The whole trip had taken sixteen hours! It took a little less than eight hours to make the journey to the Moon, traveling at a rate of 30,000 miles an hour. It was estimated that on a longer journey where there was time to accelerate the machine more quickly, *The Mentor* could travel at 50 miles per second or 180,000 miles an hour.

Ready!

THE scientists were most enthusiastic about *The Mentor*, and barring a few supplementary adjustments they advised that it was ready for the long journey to Venus. Immediately upon their report an order was given for eleven more astralnautic flyers to be constructed. The laboratories promised to complete them in four months' time. In the meantime it became the duty of *The Mentor* to prepare crews for the other ships under construction.

At the same time the laboratories were also at work upon the construction of the several weapons the engineers had recommended for use upon the flyers. Of all the inventions filed away, only two were to be given trial. The first was a most deadly ray called 22A, a ray whose color was purplish-red and which completely disintegrated all matter regardless of its composition. The second was Explosive 67 whose power was breath-taking. Six pounds of it were powerful enough to demolish a whole mountain. There was still a third weapon—the one which the Mentor trusted would be sufficient to subdue the Venusians without having recourse to the first two more destructive weapons. This was a new ray discovered by an engineer a month before. In trying to learn what power the Venusians had used to paralyze their captives, as well as the power-motors, he had accidently found a device he called the Super-Resonator that could destroy any machinery by causing its molecules to be speeded up to such a degree that the machine burst into a thousand fragments. The ray from the Resonator was a blue beam; it had a spread of twenty feet, and a range of more than five miles. The Mentor recommended that that ray be used in preference to the first two exterminators, unless it was to be found that the Venusians were bent upon more destructive measures when their planet was invaded.

* * * * *

Seven months after the Venusian descent, the eleven new space-flyers were ready for action. They were each given a trial trip in which they proved themselves equal to any strain. Meanwhile twelve thousand flying men had been mobilized. Care had been taken in selecting them from the thousands of applicants as well as the twelve hundred men who were to make up the crews. Of officers there were one hundred to each ship with their commander. *The Mentor*, as flag-ship, carried Commander-in-Chief Ware, who was to take over the direction of the expedition. San Tu Ackwa and Yoto Murca were to accompany him in the role of technical directors. A group of astronomers with Professor Anton D'Arcy at their head were ordered to accompany the flyers. By using a particularly short wavelength it was learned that radio communication between the twelve ships could be carried on in space.

Finally the day came for the embarkation of the expedition for Venus. Again the Mentor admonished Ware to do no more damage to the Venusians than was necessary for the recovery of the fifteen thousand abducted Earthlings. If possible, an attempt was to be made to establish some peaceable communication with the Venusians!

CHAPTER VI

A Race Through Space

WITH the departure of the expedition, the Tele-Visual screens broadcast the stirring scene from Lick as the twelve ships in a V-shaped formation set off into space. Inasmuch as the two planets had been steadily moving apart, Venus now lay 120,000,000 miles from Earth. Journeying at the rate of 180,000 miles per hour it would take them nearly 30 days to reach the planet in its present position. But the planet would have moved further from the earth in the meantime and the whole journey would take 60 days.

Days, long endless days of silence passed after the departure of the ships and their brave crews. Through the great telescopes the progress of the ships was watched with anxious eyes and the news radioed to the millions of the Earth's people.

Fifty days had passed, when one day the weary observers at their telescopes saw six ships emerge from the Venusian atmosphere and set their course in the direction of the oncoming earth craft!

Was it a challenge? Was there to be a battle in space? The earth's people held their breath during the following days as the parties drew swiftly closer. Then they saw that the Venusian vessels had veered suddenly, as though unaware of the oncoming spheres. There was what looked like panicky movement among them as they suddenly dashed out in all directions. They were then seen to come together again beyond the Earthly ships, sweep around them and head for home again!

Meantime, aboard *The Mentor*, Commander-in-Chief Thomas Ware was also in a quandary. Through the televisual screens that photographed all that went on outside the globes, he had watched the quiet approach of the enemy. His orders for preparation for battle rang out, and drawing themselves more closely for action, the Earthlings had waited. Then in surprise they saw with what shock the Venusians had met them, as they lost their formation, separated, then gathered together again

and ran for home.

It was D'Arcy who stated a decisive opinion of the meaning of that maneuver. Apparently, unaware that the Earthlings were preparing for war, the Venusians had waited only long enough to discover the result of their experiments with their fifteen thousand captives. The results had been good, and they had prepared a half dozen flyers to descend upon Earth again and kidnap six times that number! They were utterly routed on discovering that the Earthlings were on their way to Venus, and they were hurrying back to their planet to warn their cohorts! Such was D'Arcy's theory.

However, the Venusians did not descend to their planet, but appeared to be awaiting the arrival of the Earthlings. They were merely keeping themselves a few thousand miles ahead of the round globes! That their ships were capable of a tremendous speed was proved by the easy manner in which they had encircled the Earthlings. Now Ware ordered their own speed increased to its limit of 250,000 miles per hour. Immediately the Venusians increased their own, determined, no doubt, to keep their distance!

THIS was vastly puzzling to the Earthlings. Was it that the Venusians were awaiting reinforcements, since they were outnumbered two to one? Why were they content just to keep ahead? Why should they wish their planet torn by strife, if reinforcements were not forthcoming? Were they leading the Earthlings into a trap? It could scarcely be more than strategy on their part!

On, on they continued with the Venusians in full view, bright lights marking their position. The void was otherwise intensely black with the great shining ball of the sun glaring so brilliantly on their left as to blind anyone who dared to gaze directly into it. The mighty corona was plainly visible and great prominences that shot out thousands upon thousands of miles into space. Professor D'Arcy spent most of the journey viewing that great star through his dark glasses. This was a year in which sun-spots were numerous, and through a telescope of his own devising, he watched a great spot that lay close to the latitude of six degrees. He estimated it to be 50,000 miles across, and was vastly put out that he had not brought some photographic plates with him.

The Earthlings Speak

TO the rear and somewhat to the left of them lay Mother Earth, now a bluish-white globe that to the voyagers appeared to be the most beautiful sight in the great Universe. Gradually she had grown smaller and smaller as Venus grew larger. On all sides could be seen the stars, some so distant that even our great sun would have appeared as but a pin-point of light to them. The fact that they could be seen at all attested to their own tremendous size. Out in the void it seemed as though a great many more stars could be observed than from Earth. D'Arcy explained that this was true, since the light of many of them did not penetrate Earth's atmosphere.

Venus was now shining with a clear blue light and in another two days and a half they would reach her. It was then that they saw a meteor hurtling directly in their path! All through the trip meteorites had been seen to drop on all sides of the space-flyers, and more than once they had had to swerve from their path to avoid them. Yoto Muren was even now studying a method by which the spheres could be warned of their coming, since it became a nerve-racking task for the outlooks to keep watch for the speeding missiles. Now as the meteor appeared pandemonium reigned for a few minutes in the ships. But as the great mass was seen to pass hundreds of miles to their left all fear was gone and they could only watch it in awed wonder. It appeared to be heading directly into the great burning globe of the sun, and though its head did pass through the corona it was seen to pass beyond the star.

AFTER another day had passed Venus lay due ahead, filling the entire prospect before them. And as the Earth ships approached they realized that the Venusian ships had deliberately slowed down and were waiting for them, planning to follow them into the great swirling cloud masses that were hiding the face of the planet. Against this blanket the ships could plainly be seen. For hours now the spheres had been slackening their speed so that when they did reach the cloud masses they were not moving at more than five hundred miles per hour. Then further braking their speed they were swimming into the perpetual fogs of Venus and their brightest headlights were switched on in an effort to cut the mist. Occasionally, through the swirls, they could see one or another of the Venusian machines, and it was noticeable that they were leading them onward to some specific point of their world. The space-flyers were put in readiness for an attack!

They were now dropping steadily, and when they estimated that they were 100 miles above the surface they saw a lake appear below, although the Earthlings did not at first recognize the ochraceous yellow substance as liquid. Only the wave-like motion proved this to be the case. Moving at an altitude of about five thousand feet the ship swept along no faster than one hundred and fifty miles per hour. The Venusian vessels were almost wholly visible, for here close to the lake the clouds had cleared perceptibly. It was then that Commander Ware ordered his ships prepared for battle. A double V was formed with *The Mentor* in the center. The first two ships of the line were ordered to let loose the blue beam upon the hindmost Venusian. Immediately the ship was seen to waver, to race suddenly ahead, then come to a halt before it plunged nose first down to the lake below. It plunged into the yellow flood to bob back to the surface where it rolled and tossed with the waves. The Earthlings had spoken!

A Strange Battle

AS the single ship dropped to the water the other Venusians went scurrying into the mists. Immediately Ware sent out the order for four ships to follow and disable them as the first had been disabled. It was then that a strange whistle sounded in the radio amplifiers on a longer wavelength than the Earth ships had utilized and a friendly voice was heard.

"Greetings, *friends*!" cried the voice, in their own tongue! "On and at them, but call your ships from the clouds! There the Zoldans have them bested! Keep to sea level."

"Who is this speaking?" demanded the operator of *The Mentor*.

"Don't bother about that now, but call your ships down, or in a minute it will be too late!"

Ware, who had been standing close to the amplifier, wisely acted upon the order and hastened to recall the ships, realizing that here was a friend who knew for a certainty what to expect. A minute thereafter two of the spheres were seen to drop from the clouds. Ware directed that they return to formation, but they did not respond! Instead they were falling straight down to the yellow ocean. They took the plunge not far from the floating Venusian, throwing up waves and spray, then coming to the surface and rolling over and over!

"Sorry, they got your ships," observed the strange voice in the radio. "However, their range is no greater than a mile or two, so if you can reach them at a greater distance you are safe. Good luck to you."

It was evident that there were friends down on the planet who had managed to construct a radio equal to their own. The two remaining scouts now appeared from the cloud banks and were being followed by the long cylindrical shapes of the Venusian ships. From the foremost ship appeared the wide blue beam that enveloped the leading cylinder, which immediately took its plunge. Again the others ran into the clouds, but this time the Earth ships stayed close to the water, waiting for them to make their appearance.

Down upon the ocean rolled the fallen earth ships, bouncing in response to the waves. Ware stared at the two disabled spheres, fearful that his men had been killed. But inasmuch as the spheres were hermetically sealed, he hoped that those caught within were safe even if temporarily paralyzed by the Venusian rays. It was then that he saw movement in the two disabled cylinders riding the waves. A hatch suddenly shot open and out of it flew one after another of the people of Venus!

Others of the ships had seen them and were exclaiming loudly at the strange forms. They were winged, and at first the Earthlings believed them to be their own people. Then they realized that the difference lay in their covering, which had first been thought to be a type of clothing, but on closer inspection through the binoculars proved to be minute scales that glistened iridescently in the half-lights that came through the clouds! Head, face, arms and body, as well as the long straight wings, were scaled exactly as a fish is scaled!

The second ship was also giving up its swarms of strange life. For a few minutes the winged beings hovered over their ships; then, as if at the direction of a leader, they flew to where the two Earth ships were being buffeted by the waves. In flight they had none of the grace of the winged men of Earth, nor were they so swift. Then a swarm of them reached the nearest sphere and were alighting on it from all sides. They seemed to examine it, and not finding what they wished, a number of the creatures dived into the water while others still clung to the side. In wonder the Earthlings above saw the sphere roll over on its side, until its man-hole appeared! Immediately the amphibians were at work upon the hatch, seeking to learn its secret!

All this had happened in such a short space of time that the men in the ships above had been too stunned to think. But when the Venusians, or Zoldans, as the voice over the radio had named them, made an attempt to slip into their ships the Earthlings sprang into action. Ware ordered five of his ships two of the remaining ships and their men to attack the motos to guard them from attack from above, while he directed that raiders. They were each to carry their electro-thunderbolts, but orders were given to stun, not kill, for Ware had come to the sudden conclusion that the Zoldan warriors were women!

CHAPTER VII

Down to the Water!

ON first reaching the atmosphere of Venus, the Earth scientists had taken samples of the air, and discovered that it was equal in atmospheric pressure to that of Earth, with perhaps a slightly higher degree of oxygen. Now, with the hatches open, the first squadrons of Earthlings came into the air and darted to where the Venusians sought entrance to the disabled sphere. The second sphere had been attacked in the same manner, and it was evident that the women would soon discover the secret of the entrances. No doubt they thought to control the space-flyers and attack the enemy with their own ships!

Acting under orders not to kill, the Earthlings dived to the attack, loosing their thunderbolts, using half charges. The winged women saw them coming and half their number rose in a cloud to meet the attack. They appeared armed with rods a foot long, which let forth a sharp dart that plowed through flesh and bone. But their darts did not climb well, and it appeared that the Zoldans were seeking to gain altitude. A dozen or so did manage to gain the air above the Earthlings, and their darts found a number of victims, sending them falling to the water below. But the Earth thunderbolts spoke and sent the Venusians plunging into the ocean, writhing and turning as they fell.

Now with the battle at its height below, a Venusian ship was seen dropping from the clouds. Before the spheres were aware of its proximity, it had taken its toll and another flyer fell to the water. Before it could gain cover of the clouds, however, a blue beam from *The Mentor* had caught it and, after carooming uncertainly, it too fell, following its victim with a mighty splash. Ware now ordered two ships to scout close to the clouds' surface, and shortly thereafter another Venusian ship fell from the fogs. That meant that there were only two more of the cylinders in the clouds. But though the spheres climbed warily into the clouds, they were unable to sight them.

ON the other hand, the two fallen ships were giving up their crews, who upon discovering that the motors were powerless, were hurrying to join their fellows in the hand-to-hand battle. More and more of the Earthlings were dispatched, and soon the water all around was literally covered by the floating bodies of the amphibians as well as a great number of the winged men who had been brought down by their darts. Either the aim of the Zoldan women was not good, or else, like the Earthlings they were bent only upon disabling the enemy, for few of their darts had given mortal wounds. They lodged mostly in the wing muscles or the limbs, bringing the men to the water, where they were left to float or swim as best they could. Unlike the women of Venus, the flying peoples of Earth seldom if ever took to the water. Hence, after their first dousing in the yellow ocean, the Earthlings were a sorry-looking people. A number of them went down before they could reach one of the floating flyers, to which they clung in droves. The winged women, on the other hand, who had been stunned by the thunderbolts usually floated on the surface. The effect of the charge of electricity that they had received, however, did not so completely stun them as to let them drown, and after lying in the water for fifteen or twenty minutes or so they could be seen reviving, to rise again to the attack with their sisters!

So might the battle have gone on indefinitely, but for the fact that there appeared to be more of the Earthlings than of the Zoldans, and the range of the thunderbolts was greater than that of the darts used by the women. There were always free troops to be flung from the hovering spheres. Now the women were attempting to make their escape, spreading out in all directions, or else diving into the water and swimming until they were out of range of the thunderbolts, not showing themselves above the water until they believed themselves safe!

Then about five miles from the scene of the battle appeared the fifth cylinder, which quickly plunged to the water. The sphere that had brought it down hovered close above it, waiting for it to disgorge its warriors. The two cruising scouts that had been searching for the sixth cylinder returned to report to *The Mentor* that the remaining ship was not to be found. They now dispatched their fighting men into the mêlée below. But all fight appeared to have left the beaten women, and the Earthlings had to content themselves with capturing as many of the creatures as they could, first stunning them with the thunderbolts and catching them in the air before they struck the water. Others were sweeping down to the water in an effort to retrieve their fellows, who were still struggling in the water, and to pull them out without wetting their own wings. Some of the wounded men in the water had managed to catch one of the amphibians and forced their captives to support them in the water so they would not drown.

The Strange Voice

PROFESSOR D'ARCY aboard *The Mentor* had been watching the whole strange affair through the floor of one of the lounge rooms. More than once he had been convulsed with laughter. He told San Tu Ackwa, who was standing near him, "I doubt that a stranger battle has ever been enacted in the history of creation! Man and Woman in battle, each trying to beat the other, yet each trying to save the other for its own benefit! Each wanting victory, but not wishing to sacrifice the other to gain its point! Without a doubt we need each other,

but whether our people will be willing to accept these strange creatures is a question. Still, I guess these women are beautiful in their own way. But would a man be willing to see his offspring plunging into the ocean for its daily dip?"

The Japanese had nothing to say in answer to the astronomer. His serious mien revealed that he saw no humor in the other's levity. D'Arcy felt his disapproval and smiled wryly.

"Seriously speaking, San," he observed, "you must admit that there has never been a queerer combat fought. But see, our men are victorious after all!"

He pointed to the ocean below, where they could see their men rising to the spheres burdened with men and women alike. All fight was gone from the amphibians, who were submitting docilely enough to the capture. D'Arcy arose from his squatting position on the floor and, followed by San Tu Ackwa, went through the corridor that led to the sphere's entrance. Here were the returning men with their captives, who were carried to the chambers above.

Commander Ware was in his own quarters, where he greeted the scientists with a smile. "It appears that the victory is ours," he observed. D'Arcy recounted the enjoyment the battle had brought him.

"Yet," said Ware, "we do not know but that reinforcements are on the way. Surely these—these women haven't shot their entire bow, they will come to succor their defenders! One machine, you know, slipped away. I am waiting now to learn how many casualties we have to report. Then we will search for land."

JUST then word was received from the commandants of the spheres to announce that only fifteen men in all were missing. Ware sighed, sorrowful that even these had to be lost. He gave the order for several squads to descend to the spheres on the water to discover whether the men were still living. It was then that the squeal of the radio announced the return of their unknown friend on Venus.

"Congratulations, friends! It was a pretty fight! However, reinforcements setting out from . . ." but with that the voice halted as though the speaker had been torn from his machine. But the Earthlings were forewarned. Ware barked his orders for a new formation. Just then the three crippled ships were seen to lift themselves into the air again. Reports came from them announcing that all was well aboard. A great cry went up from the remainder of the fleet when they had seen their fellows once more rise to the air, and again the ships were prepared for battle. The Visual screens showed a half dozen cylinders far off in the distance hurrying to where the Earth ships waited. Ware hesitated no longer. He ordered that the ships be brought down as soon as they came within range!

But again the shrill whistle of the Venusian broadcaster was to be heard. The now familiar voice was more ringing and exultant than before.

"Greetings to the valiant Earthlings from Waltia, Queen of the Zoldans!" he cried. "Waltia acknowledges the Victors and expresses a desire for a conference upon the Isle of Xora. She asks that you permit her ships to aid her defeated flyers. You have the word of the Zoldans that you are safe in their midst, and a Zoldan never breaks her word! One ship will guide you to Xora; the others will come to take their ships in tow. Are you agreeable?"

The Commander signified that he was more than willing to accept Queen Waltia's terms, and that the six approaching cylinders were to be allowed to draw near unmolested. He asked more of the broadcaster, but the repeated signals on his wavelength brought no answer. There was nothing for them to do but follow the single ship that detached itself from the other vessels and turned about preparatory to leading them to Xora.

"We're in for a strange experience," Ware smiled.

"Stranger than fiction," D'Arcy commented.

Ware nodded.

CHAPTER VIII

Women With Wings!

AS they followed they saw that the Zoldan ships were grappling the helpless cylinders with long metallic arms that had upon their ends a great circular cup-shaped affair, which acted either through a suction or a magnetic field as it fastened itself to the black sides of the crippled machines and bore them aloft. Burdened so, they could move but slowly and were soon left far behind.

The navigators turned to their compasses, which upon entering Venus' gravitational pull had reacted exactly as they had upon Earth, proving that Venus also had her magnetic pole. The compass showed that they were moving in a direction corresponding to east, with a deviation to the south. For three hours they flew over the yellow ocean.

D'Arcy suggested that the captive women in *The Mentor* be freed from their quarters for a closer examination, so that they might know more about the women of the planet. In a few minutes a half dozen or so of the scaled creatures were brought forth. They stood a little less than six feet in height, and appeared to be well proportioned. The wings were not half so long as Earthly wings, and were far less powerful for flying. Evidently the Zoldans did not take very long flights. The fact that they were scaled like fish pointed to the fact that they spent a great deal more time in the water. Captive as they were, they appeard very docile, and made no attempts to rebel against their captors; but the manner in which they held themselves, their arrogance of carriage and the pose of their heads showed that they considered the men of Earth an inferior grade of being. Moreover, a certain patience of bearing was evident in their faces, and later D'Arcy attested to the fact that he felt as though they considered him naught but a child who needed some humoring. Only one of the women wore any adornment upon her person, and that was a girdle of a bluish metal incrusted with strange entrancing jewels. No doubt she was a personage, as she held herself aloof from her fellows with the arrogance on her face more marked than in the others.

Had it not been for the minute scales that covered her face and her head like a cap, she would have been considered beautiful according to Earthly standards. The eyes, which were almost an emerald green, were over-large, and hidden fires seemed to live behind them. Her nose was very small, with nostrils that scarcely appeared against the background of the glistening scales, and her mouth was of tiny proportions, with its edges of the same green color as the eyes! The shape of her face was almost a perfect oval, and the neck that supported the well-shaped head was slender and well-poised upon the broad shoulders of a swimmer. Her body was slender and deep-chested, and the fact that she was without breasts gave her a rather boyish figure. The most startling feature was the fact that between both her fingers and her toes there were webbed membranes like those of a duck!

IT was she of the girdle to whom Commander Ware now addressed himself. And yet from the beginning he had known that they two could not converse unless she had managed to learn something of the Earthly speech from one of the men they had captured from Earth. He did in fact address several remarks to her, but the woman made no attempt to answer, but stared with disdain upon her captor, something like a faint smile wreathing her strange lips.

"Not a bad-looking creature, at that," remarked D'Arcy. "Appears to have a great deal of spirit and little respect for the genus Man. Doesn't even trouble herself to attempt to converse However, something about the throat and lips tells me that these women are not much given to speech. Perhaps they have no spoken language? The ears are very small and underdeveloped, too—better for receiving sound under water than atop, like the ears of the fish! Fish are not known to make any sound, and

unless I miss my guess these Zoldans are the direct descendants from the *Teleostomi**—in other words, from common every-day fish!"

As the scientist spoke, the woman turned her eyes upon him, and a smile more gentle than the one she had given Ware was flung to him. Later D'Arcy admitted that he had had the feeling that she had understood his every word, and yet, if she had understood, would her smile have been so kindly?

Now she was looking about the chamber in which she had been received. Near at hand were the radio and Visual screens, and her eyes lighted brightly as she saw the long shape of the space-flyer of her own people moving ahead. Another screen showed the water that lay below, and beyond and upon both sides the accompanying spheres of the Earthlings. At a desk to one side of the room sat an officer with an array of instruments before him that he was manipulating as he gave directions to the engine rooms and various other parts of the ship. There was no query in her eyes, but understanding and something like admiration too.

Ware seemed at a loss what to do with his guests, but D'Arcy, who had taken a liking to the strange woman, managed to convey to her that he would enjoy taking her about the flyer on a tour of inspection. She nodded in affirmation to his suggestion and, followed by the other women, they made the trip, D'Arcy pointing out to them whatever he thought would be of interest to women acquainted with the science of space-flying. Ware sighed with relief when they had left the commandant's quarters.

On Venus

THE ship was now nearing what appeared to be a low shoreland, and for two hours they followed it. Nothing was moving on the sandy shores, which were colored a deep shade of orange. It was a desolate-looking country without a living thing to break its monotony. Far inland could be seen several dark splotches of purplish hue, but whether or not these were vegetation they could not tell. Twice they passed what appeared to be small cities, but different from any they had ever seen, cities that appeared to have been constructed of building blocks such as a child plays with. Each block was of the same black material as the Zoldan space-flyers and was set in geometrical arrangements; and in no case were they higher than two levels. Facing the water could be noted a single doorway without another opening to break the smooth walls. And in the cities not a living creature was to be seen, yet the Earthlings had the feeling that they were being watched.

The sea coast was again left behind. To the east appeared another long coast-line, but they did not follow it but proceeded due south over the water until they sighted a large island. Most of the island was covered by the black blocks which made a striking contrast against the background of the orange sand. It was in the exact center of the island that they saw a building which differed from the rest of the city. Here, in a square of tremendous proportions, with a black surfacing, was set a large square building and instead of the conventional black it was a snowy white.

Once more the friendly voice was heard in the radio, ordering the ships to descend to the square in front of the white building. Ware directed their descent and one by one the spheres settled to the ground in rows of three. *The Mentor* was the last to land and stood facing the single doorway of the white building. The cylinder that had guided them hither was no longer in sight.

CHAPTER IX

The Matriarch

D'ARCY had by this time returned from his tour with the Zoldans. Ware ordered that the women be returned to the quarters set aside for them, and turned to the matter of disembarkment. He and D'Arcy and the two Japanese were the only ones to leave *The Mentor*. Reaching the surface of the square they saw that it was of a sleek metal and had been laid in a single strip with no expansion strips. With surprise they noted that the building they were facing was transparent, and that every article within was clearly visible from the square! The black buildings also were found to be transparent, but their color made this feature less apparent, and figures within could barely be discerned.

There was a great deal of movement within the Palace of Queen Waltia, where figures moving back and forth or standing near the walls peered out upon the strange vessels of the victorious Earthlings. Then from the doorway came a small band of women preceded by one who towered above the others by almost six inches. Weird they were, with their strange scaly covering and their narrow scaled wings. Almost fantastic they seemed to the Earthlings.

All of the twenty women were ornamented with girdles of different designs, vying with each other in splendor. The girdle of the foremost one was an exquisite bit of workmanship entirely covered by jewels of all shapes and colors, many of which were hues never seen in precious stones upon Earth. The woman herself was a striking creature, statuesque and beautifully proportioned, with a face that appeared chiseled from living stone. Her eyes of emerald, however, were almost too large for beauty, and her mouth was uncommonly small.

She came to a halt with her party within ten feet of the group awaiting her, and stood there quietly without a word, surveying them as they surveyed her. It was then that the Earthlings perceived that in her retinue there was a familiar figure, one of their own race!

At a motion from the Queen—for she was indeed Waltia—the Earthling detached himself from the group and, after extending his left arm toward the woman in some manner of salute, addressed his fellow-men.

"The Matriarch extends her greeting and her good-will to the people of Earth," he declared. "She wishes to express her deep admiration for men who have so bravely attacked her formidable craft. And she observes that it is indeed surprising to her that beings of our sex show great courage as well as such an array of scientific knowledge. She feels that after all, even though you be men, she need not be shamed by your victory over her warriors, for you are undoubtedly people of great accomplishment!"

THE last was said with a broad smile which the Matriarch, as the interpreter saw fit to call her, did not see, since he was facing his fellow-men.

Ware could not help but smile with him. "We of Earth, on the other hand," observed the Commander, "are equally surprised to learn that Queen Waltia has such a poor opinion of our sex. We are also astounded that the female of the species has proven such a worthy foe to the Lords of Creation!" He said this with a little smirk he could not keep from his lips. It had been many centuries since men had used those terms, but he felt that the occasion called for them.

Turning to the queen, the interpreter began in a strange humming tone to explain what the commander had said. They saw the smile play upon the woman's lips. She, too, recognized the irony of his remarks. Then she took a step forward and extended her right hand to Ware. The Earthling had no doubt demonstrated to her the Earthly manner of salute. The Commander stepped forward and took her hand in his. If he had expected to find her flesh cold to his touch he was mistaken, for it was warm and vibrant with health, and her clasp was hearty.

With that done, she turned to the Earthling at her side and the same humming sound that had come to his lips now slipped from hers. He interpreted her words: "Her majesty suggests that perhaps it would be well for you to permit your men to descend from their cramped quarters. There is nothing to fear,

* A class of fishes with well developed jawbones.

as she has given her word guaranteeing their safety. They are given the freedom of the planet!"

Nodding, Ware turned to The Mentor and waved an arm. Immediately one of his officers appeared and the order was given for the men to land.

"We are holding approximately three thousand women captive," he advised the Queen's interpreter, "and I would prefer to keep them prisoners until we learn what terms we may reach with the Matriarch. I trust she will be agreeable to that condition?"

The other nodded. "Her majesty is aware of the fact that you retain her fellow-women until suitable terms can be made." He answered without bothering to address the queen.

Kiter Explains

NOW, one by one, the spheres were being emptied of their crews. In each, a small detail of men were to be left to guard the women. The men quickly fell into formation and stood at attention awaiting the next command of their leader. Ware gave the order for them to relax, while he looked for instructions from the queen's interpreter.

"Arrangements have already been made for the quartering of your men within the houses that face the square, which have been vacated for that purpose. There they will be looked after by the women. However, it will be quite agreeable to her majesty if you prefer to leave a number of your men to guard your machines, although that precaution is entirely unnecessary.

"As for yourself and your party, the Matriarch will be pleased to have you accompany her to the palace where we can discuss the present situation in comfort."

Ware nodded and gave directions to his officers for the care of the men; then with Professor D'Arcy and San Tu Ackwa and Yoto Murca he followed the queen and her retinue to the white transparent palace. The doorway was a circular opening with a crystal of tremendous size suspended in lieu of a door. It was cut with exquisite care and its facets caught and reflected the half-lights that filtered through the ever-present cloud banks.

The building itself was a great rectangle measuring fully a thousand by two thousand feet, and was three levels high. Coming through the doorway they found themselves in a room of large proportions, with no furnishings other than an immense throne chair set on a dais at the opposite side of the room. It was of a deep emerald green color, and appeared to have been cut from a single stone. Through the walls of the room they could plainly see the square beyond, with the spheres and men now maneuvering in answer to their officer's commands. They did not pause in this chamber, but went directly through to a second room. Here at the doorways were stationed women who stood at attention as the company came through. In the third room, which was furnished simply with a dozen large chairs with the backs cut low to provide room for the wings to dangle to the ground behind, the queen halted. All but one of her followers went on through the next doorway, and were seen to arrange themselves upon chairs in the adjoining room. Turning to her guests, Waltia motioned for them to be seated. The Earthly interpreter took his position at her chair. Later he gave his name as Jack Kiter. He had been a metallurgist on a holiday at Miami at the coming of the Zoldan flyer to Earth, and had had the misfortune to be captured by the winged women. Only he did not appear to consider it a misfortune, as the others were presently to discover!

IMMEDIATELY after they had seated themselves comfortably, a half dozen women who, unlike the others, wore no girdles, came in bearing small tables upon each of which was set a single yellow bowl and beside it a long pencil-shaped wand with prongs at one end. A table was set before each man. Happening to glance behind him, Ware was surprised that he could see out into the square almost as clearly as if three walls did not intervene. There he could see hundreds of flying women moving among his men, bearing trays of yellow bowls! The bowl set before him he found to contain a thick greenish liquid in which were floating a number of bits of what looked like boiled flesh. The flesh was a vivid red.

"The Zoldans," observed Kiter from his post beside the queen, "live entirely upon water-life—fish, squids, sea serpents and other forms of life which I am unable to name. Sea-weeds of different varieties are ground into a sort of flour and baked, though one or two varieties are eaten in their raw state. You will find this dish tasty."

The Earthlings stared at the food a little questioningly, but when they saw the queen spearing the flesh lumps with her strange fork they did likewise and were surprised that the food was rather good, although the fish flavor was strong. When the solid food was gone they looked up to see what their hostess would do next, and saw that she had already put the bowl to her lips to drink the liquid. It was stinging hot, but it had an aromatic flavor that was refreshing. With the food consumed the dishes and tables were removed and the visitors waited for what was to come next.

CHAPTER X

A Strange Race

THE queen had turned to Kiter and for several moments her humming tones persisted. Then the interpreter began to speak to his fellow-men. "Queen Waltia wishes me to tell you something about her world, which is called by her people *Zolda*. It is a world composed mostly of water, and what land there is lies grouped loosely together in islands. There are still a great many of these islands that have never been visited. To the Earthly eye it is a strange world with its ochre yellow seas, its orange sand, its purple, red and blue foliage. Much of the ocean bed is very shallow, although there are regions in which the bottom has never been reached, but on the whole it is no more than from six to seven fathoms in depth.

"It is natural, therefore, that the Zoldans should have had their beginnings in the water. Their scientists, like those of Earth, still seek for the missing links in their history in fossils found for the most part in the silt on the bottom of the oceans. At first the life of the Zoldans was spent under the surface. But, in water so shallow, it is not strange that they should have lifted themselves out of that element by their wings, which were developed from finny appendages along the backbone.

"In the beginning they merely skimmed the water for a distance of eight to ten feet before they dropped back into it, much as do the flying-fish of our own oceans. Then gradually the fins changed to wings that could lift them a little higher and to a greater distance. At the same time they were developing their lungs until they could, if they wished, live almost entirely out of the water in the heavy moist atmosphere of their world. You can see the small gill slits, that you perhaps have taken for ears, by which they breath the oxygen in the water when they are swimming under the surface. Now they can no longer stay below the water more than half an hour to an hour at a time, for, gradually through the ages, as their lungs have developed at the expense of their gills, they have been losing their ability to live as amphibians.

"It may astonish you also to learn that they have no organ of hearing. Instead, the voice sets up a series of vibrations in the very sensitive nerves of the skin surface, and these register upon the brain. Loud noises are vastly disturbing to their delicate nervous system for this reason. We have discovered that music and singing are very pleasant to them, and they have looked forward to our perfection of the radio, upon which a number of our people have been working.

"NOW, the Zoldans live entirely upon the sea coast and rarely go inland except to mine the various metals with which they have learned to work. It is from the water that

they obtain their food, and it is upon the water that they breed their young, for the Zoidans are an egg-bearing race, and their eggs have to be incubated in the water. It takes three months for the young to hatch, and much care is given them in specially built vats in sheltered coves along the seashores.

"The strangest feature of the Zoidans is that from the very beginning of time the female has always been the dominant sex, the male being accepted by them only as a biological necessity. As an intelligent being he is practically nil. He is physically a weakling, so that all labor falls upon the shoulders of the women. And now for many ages man has been slowly dying out, for although the women have done all they could to save the sex, there seems nothing to save him, and his birth-rate is very low—only one male to every 50 females born. There is also a disease that attacks the grown males, for which there seems no cure. The Zoidans, therefore, are faced with a problem that equals that of our own planet, and the raid they made upon us was simply a means to save their race. They had visited Mercury for this purpose before they tried the Earth, but there was no life upon that little planet. Of course, they were elated on discovering not only that Earth was inhabitated, but also that its peoples were winged like themselves.

"We captives have had a difficult time in striving to prove to them that Man can be the equal of Woman, and they are now grudgingly admitting that this is so. Your feat today in besting them has proved to them that they are not superior to us.

"When their ships met you out in the void they were astounded to learn that you had succeeded in conquering space, but they believed that once you arrived on their planet they could paralyze all your ships and capture you easily. They themselves were bound for Earth to make a second and larger capture, for they had now completed their experiments and discovered that they could successfully breed with us. Naturally enough, when they found that you were arriving with thousands of men, they were content that you were bringing yourselves to them and saving them the journey to Earth! Consequently they were wholly unprepared for your attack on them.

"But since you have proved yourselves worthy of their mettle, and since you, like themselves, have a scarcity of the opposite sex, they are willing to capitulate and make a fair exchange with you—to send to Earth just as many of their women as Earth will give of men!

The Truce

"WE, who have been captured, have agreed that this is a solution to our problems. Zolda, or Venus as we call her, has much to give to Earth besides her women, and Earth can fairly exchange with her. The planet has wonderful resources, many of which still remain untapped. There are metals and jewels that will be invaluable to Earth, metals of such hardness and lightness that they would indeed be of a value that now seems incredible! And in return Earth has much to offer Venus. In several branches of science the Zoidans have been backward because they lack some of the necessary equipment. But if our peoples would be willing to make exchanges, the inhabitants of both planets could progress along lines that in the past would have seemed like miracles!

"You will find the women of Venus a happy, pleasant populace who for all their science are almost childlike in some matters. They are anxious now for our two worlds to become friends, and they will do all they can to bring this about. And they plead that the Earthlings forgive their temerity in having dared to capture what Earthlings they did, for it was done through sheer ignorance upon their part. They believed the men of our world to be the same weak creatures that men are on their world, and did not dream to find them as intelligent and as advanced as themselves!"

When Kiter had concluded his narrative, the Earthlings were silent. The story they had heard was indeed a strange one. They knew not what to answer Queen Waltia. True, here was a solution to their own problem ready to hand, but would the people of Earth be willing to accept these strange amphibians in their midst? And would the intermingling of these bloods be practical? Would not such an interchange cause a strange race to come into being upon their own fair globe? Would it not mean that the habits of the Earthlings must be changed? Would it not affect their whole manner of living? Would they continue to be the great fair-minded race that they were at the present time? It was indeed a momentous decision that the Earthlings were called upon to make!

Quietly the four men discussed these questions among themselves. Kiter had explained that the Matriarch would not object to their conversing together apart. He was listening quietly himself, but after a few minutes he addressed a question to Waltia. She nodded at what he had to say, and gave an order to one of the attendants standing in the doorway. A minute later the woman came back carrying what turned out to be a young Zoidan, or rather a child that was of both Zoidan and Earthly parentage

IT was a child of about two months but it had the appearance of a year-old youngster. Its face was that of an Earthly child with fair skin, but its eyes were abnormally large while its body was covered with the tiny fish scales that caught the light and reflected it like a prism. Its hands had no webs, but its wings resembled those of its maternal race, shorter and slenderer with none of the power of the Earthling wings. The wings were almost wholly covered with scales, except where they joined the body, where there was a suggestion of soft down that would grow into feathers as it grew older.

The four men examined the child carefully. It was a pleasant baby, and showed great interest in the strange men. They examined the wings which they thought were poor substitutes for their own wings, but D'Arcy was certain that were they developed properly they could be made to grow stronger. Perhaps the Earth's scientists could increase them with their glands and formulas, as Mentor had first evolved wings upon a wingless people. Still, to the Earthlings, the baby was a queer little thing and its appearance was somewhat distasteful to their fastidious minds. The queen, who had been watching their deception of the child and their examination, turned again to her attendant, who went away to do her bidding. She returned with a second child. They saw that this one was entirely free from scales on the trunk and limbs, but that his round head was capped with them instead of hair, and that the wings, though larger than the first baby's, were completely covered with them.

"This child," explained Kiter, "is born of an Earth mother and a Zoidan father, for you know that there were a number of our women in our midst when we were captured. The mother died when the baby was born, for unlike the other child he was born from the mother instead of from an egg."

"H'm . . ." meditated D'Arcy. "It would be more interesting to see what several generations of these offspring would bring!"

Kiter spoke several moments to the queen and then addressed his fellow-men. "Her majesty can not quite understand your hesitancy in accepting these children, but she agrees that it would be well first for the matter to be brought up before the planet ruler. She would suggest, therefore, that you return to Earth with a dozen or so of her women and their offspring to be taken before the Mentor. In the meantime, however, she insists that she keep on Zolda the men she has captured. If the Earthlings decide against the importation of the Zoidan women, she will return all the Earthlings who *wish to return to their own planet!* The decision will rest with you who are the victors, and if you do not wish to breed with her people she still hopes that the Earthlings will be willing to accept her people as friends and allow commerce to be carried on between the two worlds! She has learned already that her people need us, and

above all the Zoldans are fair-minded. They do not begrudge you your victory, but admit that you have beaten them fairly."

The four men conferred together for several moments and agreed that the terms were more than fair. But first they had to learn whether their people were content upon the strange world, until the planet ruler could come to a decision. Kiter smiled at that. Very few of the captured Earthlings, it seemed, were rebelling against their lot! There was so much here to interest them that they had scarcely had time to feel any pangs of homesickness. And they were finding that the amphibians were congenial mates!

CHAPTER XI

A Night on Venus

WHILE they had been speaking, the night had been descending upon the planet, although a shaded light still lingered in the heavens. There had been a magnificent sunset as the rays of the sun were reflected upon the upper cloud banks, painting them in gorgeous colors that ranged from vermilion reds to dark violets. The men had only to lift their eyes above and see it all through the transparent ceilings of the room and the roof two levels above them.

For many centuries Earthlings had questioned whether or not Venus rotates upon her axis, or whether, like Mercury, it has but a single rotation during its solar year.

Now with the coming of night the Matriarch spoke again through her interpreter. "The Zoldans retire with the setting of the sun, gentlemen," the latter explained. "Although they do have artificial light, they seldom utilize it, preferring to sleep with the sun's setting and awake with its rising. I am directed to escort you to your sleeping chamber."

They saw that the queen was rising from her chair and with a nod of her head she was gone, followed by her attendants, who had been waiting in the adjoining room. Ware was first anxious to learn whether his men had been cared for, and Kiter pointed to the square which, with the exception of the spheres and the few men left to guard them, was deserted. He assured the Commander that he had no need to worry about his battalions, but that the women had their care at heart. Then he led them down a corridor to an inclined ramp that took them to the second floor of the palace to a large room, wherein were half a dozen couches for their use. All around them through the walls they could see the rooms filled with couches upon which women were already sleeping. Beyond the walls they could see the square black blocks of houses whose walls were less transparent.

"I believe," conjectured D'Arcy, "that there is an old proverb that tells us, 'people who live in glass houses shouldn't throw stones!'"

KITER grinned. "Only, professor, these houses are not of glass . . . but of metal! Almost all Zoldan metals are transparent. The black metal that is called *ceilata* is only semi-opaque, and is used as the general rule for building. The space-flyers are built of it, but since their early history the palaces of their rulers have always been built of *tielata*,—for the simple reason that all the world can watch their movements and there can be no treachery! And one simply becomes accustomed to having every movement seen by his fellow-man. He is then not so apt to break the laws or to hold secrets!"

"Not a half bad idea at that!"

"How is it that they use no lights?" demanded Sun Tu Ackwa.

"They have, in the first place, little use for lighting, and, strange as it may seem, they have never developed their natural resources to a very great extent. Fire is rarely used by them, and electricity is an unknown quantity. In cooking, as well as for generating power, they use atomic heat, having a means of disintegrating the atoms through a cosmic ray whose base I have not as yet been able to learn. With it they drive their engines and motors, but they have not as yet learned how to produce light. When they need light they use a strange phosphorescent stone that sends off a small glow. By a unique array of mirrors and lenses they are able to focus this glow and so to obtain a tremendous amount of light which they are enabled to direct in any direction they desire. It takes great care and fine workmanship to grind the proper lenses, so one can readily see why light is not generally used in their homes."

"And what type of ray was it that they used for paralyzing you when you were captured? And in the radio and power plants?"

"That is not a ray but a gas that is found below the ocean beds. When using it the Zoldans cover their heads with masks and breathe from oxygen tanks. The gas does not affect their engines as it does ours. Why it should react upon our motors and not theirs is a problem that Dr. Howard Cross is working upon. In fishing for the sea creatures which they use for food this gas is used, since it permeates the water as well as the air—even more readily in fact. It paralyzes the creatures but does not kill, for the Zoldans will not eat food which is not put into the kettle alive."

"It seems to me," observed D'Arcy, "that for a people so versed in certain fields they are sadly lacking in knowledge in others."

Kiter Confesses

KITER nodded. "Yes, it is strange that they have not carried their development evenly along all lines. Nor would you consider them a cultured people by Earth's standards. They have no music, no recreational amusements of any kind, and they are not at all interested in education. They have no written language, and their mode of accounting seems childish, yet they have a great amount of native shrewdness and they are quick to grasp a subject once it is laid out before them. Furthermore, their understanding of mechanics without a mathematical background is phenomenonal. You must have noticed, also, that their manner of speech is very crude. I consider, in fact, that their backwardness in various subjects is due to their lack of an organized coherent language. There are actually no distinct word sounds, but the inflections of the voice and the narrowing and opening of its volume mean innumerable things to them. It was most difficult for us of Earth to learn at all, and only a few of us have really mastered it. We often have much difficulty in giving names to objects, and the names I have given you are really of our own devising, based upon their own sounds."

"You appear to get along well with the queen, Kiter."

He grinned broadly in the dark. "Oh, we understand each other. That's all. What I told you of their history took me quite a while to learn, but these women have all the patience in the world and will tire themselves out in an attempt to teach us what they want us to learn. They are as anxious to learn as we are ourselves, and I have managed to teach Waltua a few words of our language. She is quick to learn, but it means a great amount of time spent in developing the vocal cords: I really doubt that she will ever become an orator, but her voice tones are beautiful for all that. And she has given us permission to teach the offspring of our two races to speak. The two little tykes you saw can really talk a blue streak already, but they are rather shy with strangers. The young develop very quickly."

"But tell us, Kiter, honestly, are you content in this gray, misty world? Don't you miss a sight of the sun once in a while and don't you long to breathe the clear fresh air of the mountain tops? Surely you don't find this world half so pleasant as Earth?"

WHEN Kiter answered his voice was wistful. "Yes, it is true that we miss that more than we care to say, and we

all have the hope that one day we may return home. Still, on the other hand, all that seems humdrum now, and Zoldn does not leave us time to feel any monotony. As for color, this world is filled with it, and when we grow tired of the water we can fly for many miles over strange landscapes. As for music, we shall soon broadcast good programs, for George Morrow now has his radio completed and is busy at the present time installing his first great station, and he has a corps of men and women at work building the receiving sets. After all, life on Earth flows in well-oiled unchanging streams, while here there is still great adventure to be found, and we have not yet reached the point where we will tire. No, life is quite enjoyable here on this strange world, and its women are pleasant."

"I see. After all, there is little in the way of home ties on Earth to hold you, and you have here a world almost in the making. I could almost envy you," said Commander Ware.

"And . . . by the way, about that radio. Was it this George Morrow whose voice gave us warning?"

Kiter nodded. "And the women almost murdered him when they learned what he was about! To them radio is almost a magic science, and when they first discovered its possibilities they were overjoyed with it. But when they discovered that he had dared to warn his fellow-beings they were furious. However, Waltia intervened. She did not consider his act one of treason, for she admits that in his place her women would have done the same! She was astounded to learn that she could watch the battle taking place in the Visual screen which Morrow had perfected so that the scene was projected to his machine by the background of the clouds overhead. Morrow, if you recall, was the co-inventor of a number of improvements of the Tele-Visual. Waltia watched the entire battle by its means and it was she who gave directions for him to declare a truce and to invite you to Xorn!"

"H'm! I wonder if our people would have been so magnanimous in a like circumstance? History rarely tells of souls so great and understanding as she!"

"It is true I have never met a woman or a man for that matter, who shows such a breadth of mind and soul."

"You call her the Matriarch. Is that the term her people use?"

"No, she is merely their ruler. They have no word sound for queen or anything to designate their leaders, but hers is truly a queenship or Matriarchy. There are other leaders among them, women who hold their position because of heritage, but Waltia is acknowledged their ruler, for through her own superiority of leadership she outranks them all. Those who wear the girdle are of the nobility lines among them, the others are the commanders, but really there is no other distinct line drawn. All work for the common good.

"But, gentlemen, if you will pardon my interruption, I would suggest that you get some sleep now. The nights of Zoldn are not over-long, due to the thick atmosphere which radiates the sun's heat long before the sun has arisen. Tomorrow Waltia wishes that you be taken on a tour of inspection, and I don't doubt but that you are in need of rest."

The men agreed that they needed sleep, and began to settle themselves on the couches, which were extremely soft. Examination of the texture of the cloth that covered them and of the blankets, revealed that they were woven of a species of seaweed that still retained a sweet though elusive odor. Kiter waited only for the Earthlings to be settled before he took himself off. They could see him moving in the gloom several rooms away. Then all was quiet, as the weary men dropped off to sleep.

CHAPTER XII

Morning!

As Kiter had said, the night was short and dawn came long before the sun rose. When Ware and his fellows awoke, the sky was being painted in beautiful colors, far more lovely than it was possible for any sunrise upon Earth to be. And through the ceiling and roof above, the Earthlings watched the shifting shades as they crept from cloud to cloud. Then, recognizing their surroundings again, after the first surprise of the unfamiliar scene, they looked about them and saw that the sleepers in the rooms about had already arisen. Looking through the floor they could see Jack Kiter seated in a chair, awaiting their arising no doubt. In fact, as they arose he looked up and saw them and waved a hand. Then he went hurrying up the ramp to their chamber.

He greeted them brightly. "Sorry we have no better accommodations here; there is no running water to be had," he advised, but after clapping his hands four of the Zoldan women appeared bearing round bowls filled with water. There were towels of the woven sea grasses.

After their ablutions in the tepid soft water they were ready to descend below. In the square they found the spheres just as they had been left the night before, all deserted except for their guards. On looking seaward they were now greeted by a strange sight. Above the square blocks of the black houses could be seen thousands upon thousands of the winged women in the air, diving and cavorting in a queer manner.

"Come," said Kiter, "if you wish to see our hostesses at their morning bath! You see, during the night the air cools a great deal and becomes rather dry, and it is necessary for the Zoldans to keep their flesh damp. Much of their breathing is through their pores, and, as in the frog, that is impossible if the skin is dry. Hence it is a morning rite with them to go down to the water for their bath. They become quite sluggish if they are kept from the water."

Taking wing, the five flew over the house tops to the sea shore. They could now see that the ocean was dotted with amphibians. The Zoldans would soar several hundred feet in the air, then close their wings and drop like plummets into the water, throwing the spray high. For a few minutes they would play in the water, surfacing, diving and swimming several yards beneath the surface, to rise again and repeat the plunge. Along the beaches standing in the surf were a number of women with babies in their arms whom they would carefully lower into the water for the space of a minute. To one side of the gathering they could see a number of half-grown Zoldans imitating their mothers, only their play was more exciting as they chased each other in short races.

"DO you know," observed D'Arcy, "that we haven't seen a single male Zoldan? They are evidently very scarce, or do they keep apart from the women?"

In answer Kiter scanned the crowds and from time to time pointed out a single scaly man or two in a group. They were slightly smaller than the women.

Down the beach Ware noted a band of his soldiers standing by and watching their hostesses with much glee. On seeing their leader, several officers detached themselves from the group and approached Commander Ware. They reported that all was well with their battalions. The three captains of the ships which had been paralyzed by the Zoldan gas made their appearance. They reported that their ships were little the worse for their experience. Only one of their number, the *Skylark*, had received any damage. Two of the plates of the outside shell had sprung a leak, but only a small amount of water had seeped in. The captain had ordered that a number of his men repair the damage immediately and he was certain that all would be well with it henceforth. On learning of the accident, the two Japanese inventors were troubled and, excusing themselves from the group, hurried to examine the damage. Later, upon hearing about the matter, the Matriarch ordered that a coating of *celute*, the black metal of the Zoldans, be used to seal the break. The stuff was brought in a liquid form and applied like a paste. In less than half an hour it hardened and nothing was found that could

chip it. To ascertain that the work had been done correctly the queen examined it herself.

Shortly after the Earthlings had arrived on the beach, the winged women had returned from their bath. Kiter led his party into the palace and in the room where they had been received the day before they were served their breakfast. This consisted of a sweetish bread made from sea-weeds and a drink that was of a white color and tasted like milk. Kiter explained that it was indeed the milk of a sea-mammal that resembled an Earthly whale. Large herds of these creatures were kept by the Zoldans.

Ready to Return

IT was after the meal that Ware recalled the woman whom the Earthlings had been holding captive within the spheres. He was apologetic about having held them thus long. Directions for their release were sent to one of the officers of the fleet, and the women were set free. D'Arcy looked for the girdled woman who had intrigued his fancy, and learned that she ranked only below Queen Waltia. She appeared to hold no animosity toward her captors, and after she had returned from her morning bath in the sea, she presented herself to the queen and her guests.

It was she who elected to accompany the Earthlings with Kiter on a tour of inspection around the island. Kiter gave her name as Kal. On meeting her late captors, she had greeted them with a smile and a single word upon her lips—"Hello!" It turned out that one of the guards who had been left in the sphere with the women had painstakingly taught her this! Her voice was melodious, the l's liquid, and she had managed to give the word a wealth of tone. She appeared to be on good terms with Kiter, and several times she laughed at something he told her in their odd humming sounds.

That day was spent in visiting many buildings that housed various kinds of factories. On the far end of the island, which was approximately fifteen miles long, were large smelting vats where the raw ore of the *ceilula* was turned into liquid and then into small blocks which could be liquified again when it was needed. They saw the mills that turned out many of the necessities used by the Zoldans and the sheds where the Zoldan eggs were hatched. Here were the incubators for those of common birth, where thousands of the eggs were placed in a foot of water that was kept at a proper temperature. The eggs were soft, and measured but three inches when first put in the incubators, but they grew until they reached eighteen inches in length. Then the shell grew hard until the time when the youngster was ready to be hatched. There were many varieties of incubators for the offspring of the various ranks among the women. Only those of the queens were kept wholly apart and were known to their own mothers. In all other cases the mother, on depositing an egg in the vats, was given a card that entitled her to a child when hatching time came.

THAT afternoon the Zoldan world was treated to the first public broadcasting of the new radio station on the planet. Amplifiers had been set up in various parts of the cities, at the most strategic points. To the Earthlings much of what went on was unintelligible, as it was in the Zoldan language, but they did enjoy a short program of singing, or rather humming, in which a dozen Zoldans took part. Their harmony was strange to the Earthly ears, but, as Kiter said, it was a big step for the Zoldans, and it had taken several months for Howard Rath, who had been a musical instructor in the Florida Conservatory, to teach the women to "sing" together in tune.

One more night the Earthlings spent upon Zolda. The next morning after the "swim" the Matriarch received them in the throne room seated upon the chair that was cut from a single jewel. The assembly chamber was filled to overflowing, and outside in the square were crowded the thousands that could not find room in the chamber. The announcement of the terms of treaty that had been accepted by Commander Ware was repeated in the Zoldan language, and the names of the two dozen women who were to go to Earth were announced. A half dozen of the Earthlings that had lived for the past eight months on the planet were to accompany their fellows to explain just what they had discovered about the Zoldans and to demonstrate to the planet ruler the uses of the varieties of strange metals that were being shipped on the spheres to Earth. Waltia was also sending a large assortment of jewels as a tribute to the Earthlings.

She made a long speech that was translated by Kiter, to the effect that she was anxiously looking forward to a brotherhood with the Earthlings and trusted that in the future both worlds would receive benefit from such a union.

Then they left the council chamber to go into the square. The crews and fighting battalions were waiting at attention for the order to embark into the spheres. A salute was given the Zoldans, and then quietly and in orderly fashion they filed into the space-flyers. The band of Zoldan women with the children that were to accompany them were taken into *The Mentor*. With them went the six Earthlings who were to act as interpreters. D'Arcy was first to note that the girdle-wearer Kal was among the women. He turned to Kiter. "Why don't you come with us, too?" he inquired.

The Long Journey

KITER saw fit to blush, then he stammered. "Sorry, but there's a great deal for me to do here. Besides, you see, her majesty has taken rather a liking to me . . . and we're great friends. I think I can do more here than upon Earth. Soon, we'll have our radios and Tele-Visual perfected so that communication between Earth and Venus will be a fact.

"Well, good luck and bon voyage . . . as they used to say!"

Almost with regret D'Arcy saw the island of Xora fade through the mists as they took their course upward again. He was sorry they had not spent more time upon the planet, for he felt that he had really learned very little about it. However, he promised himself that he would return with the next expedition, and perhaps he could arrange to stay on the world for several years. There was something for the astronomers to learn here about lens grinding!

Soon the swirling cloud-banks of Venus, or Zolda rather, faded away. To the right of them glowed the great sun. Earth lay ahead, a beautiful shining planet that to the Earth man far surpassed the beauty of its fellow-worlds, even that strangely lovely planet of Mars, whose brilliant color out in the void was that of blood. The trip home was made more quickly than the outcoming one had been, and was wholly uneventful.

Upon *The Mentor* the only diversion came from their guests. The women had been given the entire run of the ship, and their interpreters were never idle as the women inquired into everything. Kal had set about to learn more about the controls of the sphere than she had discovered on her first trip therein. And she seemed determined to learn the Earthly tongue, continually demanding the names of every object in sight to which she pointed with her webbed fingers. D'Arcy, who had been so taken with the woman, resolved that just as soon as it could be possibly arranged he intended to ask for permission to adopt her, if she would be agreeable to such an arrangement. He had never married and was without a single tie. Kal, he thought, would be a daughter who would be a never ending source of enjoyment. She too seemed to have taken a great liking to the astronomer, and appeared to derive some comfort when in his presence among these men of a strange world.

THE children the women had brought gave a great deal of pleasure to the crew of *The Mentor*, for they were lively little things. One in particular was already attempting to crawl, and his large bright eyes were always questing for something to hold his attention. Jestingly they called him Venus. How-

ever, the last few hours of the journey were anything but pleasant to him, since one of the soldiers daringly handed him a piece of chocolate, which he immediately devoured. The women had been feeding the babies entirely on the milk of the sea-cows of their world, which they carried in sealed bottles, and the chocolate was wholly indigestible to the little fellow. The woman who had charge of the baby cast angry glances at the miscreant, and more than one man had his hands slapped when in a joke they attempted to feed more chocolate to the other youngsters.

The long days of the journey had passed and now they were reaching Earth. Just outside of Earth's atmospheric blanket communication with Earth was established and thereafter they were constantly in touch with their fellows. The Mentor and his staff were waiting in the wide square before the government seat in Havana, and great crowds for many miles about awaited the landing of the spheres. As the spheres one by one disembarked their crews, arms reached out for the travelers as the delighted Earthlings crowded around.

Ware with his officers and the group of scientists were received in an open clearing maintained by guards. Little talking could be done in the hubbub of sound that swelled and beat on the ears, and the police had difficulty in forcing open a path by which they could reach the quiet of the building beyond to make their reports. It was then that a strange and terrific noise burst forth, causing Ware in sudden fear to look around for the group of Zoldans who, under the guard of their interpreters, should have been walking behind. He saw that they were not in sight! . . . Then he found them!

In the center of the square was a fountain with a fairly large sized pool. A great crowd had gathered there and were excitedly screaming and gesticulating, pointing at something in the water. Ware and D'Arcy, with the Mentor following close behind, unaware of what had happened, flew above the heads of the milling masses to the fountain. They were astounded to find that the twenty-four women with their babies were all lying prone in the water, while the six men whose duty it was to care for them were trying to force the laughing crowds to silence.

Earth Again!

AT Ware's query, Charlie West, who had the women in his charge, explained that the noise of the crowds had been too much for the women, who were unaccustomed to loud grating sounds, and they were merely seeking quiet under the water! They had smelt the presence of water, and had flown to it by an unerring intuition.

The Mentor immediately dispatched orders for the square to be cleared and the crowds quieted. When the noise eventually died down, the women were enticed from the pool. A house adjoining that of the planet ruler was immediately made ready for them. There in the patio was a small fountain which the Mentor ordered removed and a large pool constructed for the use of the women.

For three days the Earthlings celebrated the return of the space-flyers, although any noise was forbidden within several thousand yards of the house wherein the Zoldans were quartered. Memorial services were also said for the fifteen men who had died in the battle on Venus.

* * * * *

The Mentor took up the business of studying the Zoldan situation. A number of the women and children were sent on a tour of the world, and scientists made thorough examination of them, but it was many years before it was agreed that the Earthlings were to breed with the Zoldans. First of all, trade was established between the two planets, and the Earthlings learned to look with favor upon the amphibians. However, after several generations of cautious co-mingling it was found that the inter-breeding was beneficial to the race. Women no longer had to die in giving birth to their young, and the presence of scales on their bodies was not distasteful to the new race. Nor were the Earthlings to become amphibians, for each new generation turned to the water less and less as time passed.

In the meantime the Earthlings upon Zolda gave reciprocal service to that world, so that in time there was scarcely any difference to be noted between the two races, and an Earthling traveling to the beautiful planet found life almost identical with that of his own world.

It was now thought that the time was ripe for an Earthly expedition to descend upon Mars, to learn whether its people were receptive to any visitors. And the question that every Earthlings asks is—cannot the empire of mankind be extended the Universe over?

THE END.

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The INVISIBLE DESTROYER

by L. A. ESCHBACH

(Illustration by Paul)

Two airplanes, leaving the main group, swooped down toward the cone in an evident attempt to wreck it. They crashed into that invisible barrier and fell to the sea.

THE INVISIBLE DESTROYER

A LITTLE more than two years ago, in the latter part of May, 1967, to be exact, a group of four men were seated before the fireplace of a log cabin in the heart of the Pennsylvania Alleghenies. It was early in the evening; the fire before which they sat dissipated the darkness that strove to mantle the room.

Three of these men were scientists, and together with the fourth they were spending a week in fishing in the well-filled trout streams of which the district boasted. The three were: Dr. Leo Vachell, in all probability the greatest scientist in the United States; Alexis Demetriovich, a Russian who, although not nearly so well known as Vachell, was nevertheless thought to be one of the cleverest scientific minds of the day; and Allen Kieth, an astronomer of no mean ability. I, Paul Taylor, was the fourth member of the group. The fact that Vachell and I were lifelong friends was responsible for my presence.

There had been little conversation during the early part of the evening; Vachell and Kieth were smoking meditatively; I had jotted down some ideas for a story that had come to my mind during the day; while Demetriovich, for almost an hour, had been poring over the pages of a newspaper that had been published two days before.

L. A. ESCHBACH

Suddenly, Demetriovich — a short, heavy-set man with bushy black hair, thick, irregular eyebrows, and a straggling beard— looked up from his reading. His brows were contracted in a heavy frown.

"They'll never do it!" he exclaimed. "They'll never do it!"

"Do what?" Vachell asked.

The Russian pointed to an article in the newspaper he held. "Unite the nations," he replied. "You've all heard of the recent World Conference held in London, and their decision to unite the nations under one government a year after the date of the conference. Their reason for waiting a year, by the way, is to allow time for dealing with any dissension that may arise. Almost every government on earth had a representative at the meeting; and the decision to unite was unanimous, but," he concluded, "they'll never do it!"

"Why not?" Kieth exclaimed. "I can see no reason why they won't unite, nor why they shouldn't. It seems to be the prevalent opinion that an International Government will be the solution of all our problems of state. I believe that it is the best thing that could possibly occur for the peace and prosperity of the world."

"That *would* be your opinion," Demetriovich snorted scornfully. "And that's how it appears on the surface. But I've been considering the problem from every angle for the last two days, and I tell you that, if it is carried out, this world union will bring about the downfall of our present civilization.

"As for its being the best thing for the peace of the world," he continued, "a little thought should convince even you that the idea is preposterous. Do you imagine for a moment that any government or any set of laws will abolish war? Bah! The last fight will take place between the last two individuals left on earth. You certainly don't believe, even though every nation signs the Union Pact, that they'll all hold true to their agreement, do you? All that will be needed to send two nations at each other's throats will be a little argument about boundaries, or commerce, or any number of other trivial matters. No, Kieth, there never has been, nor ever will be a solution to the problem of war."

"YOU are probably correct, Alex," Vachell interposed, "but don't you believe that an International Government will at least render wars less numerous, inasmuch as a revolting nation will be pitted against every other nation on earth? I believe that a government will think twice before opening hostilities against a neighbor, when all the nations are united."

"I suppose that is so," Demetriovich assented rather reluctantly. "But that isn't what I had reference to when I spoke of the downfall of civilization. I was thinking of the effect it would have upon our mode of living.

"The political problems of today are simple when compared with the complexities that would arise with the establishment of an International ruling body. At present we have to contend with the so-called grafter, and his crooked methods in politics. Today, we meet with petty vote buying, with the control of executives by organizations that secure office for the politicians, with the purchase of immunity from the law by the dishonest rich, and similar instances of unpunished crime. What would the conditions be in the case of an International Government? Every country on earth with all their graft, would render the government of the world rotten to the core!"

Demetriovich had arisen in his excitement, and had unconsciously assumed the air of a lecturer, shaking the folded newspaper to emphasize his words. Yet there was nothing ludicrous about his actions; the deadly earnestness of his every word and gesture dispelled any feeling of mirth before it was fully formed.

"But more important still," he continued after a moment's pause, "are the financial and industrial problems that would arise. Even today, the corporations and trusts have become a menace to the financial peace of the world, placing far too great a degree of power in individual hands. Imagine what will happen if the field of financial endeavor is widened to encompass the entire world! Eventually, I verily believe, the money of the world would be controlled by ten or fifteen men.

IT is well known that the world in which we live and have our being is only one of the possible worlds that may exist in the same space with us. Astonishing as this statement may sound, when we examine it we still find it to be true.

As our author points out, everything we see and hear and feel and detect with our other senses is perceptible to us merely because of certain vibrations of these bodies, and that if it were possible to change the rate of vibration it might be possible to detect a new world which exists simultaneously with ours.

If one could discover how to use this vibration, what a great power he might have over life! He could in fact become the ruler of our universe, because as we know vibration is the secret of all life.

In this remarkable aviation story of the future, our author treats of such a theme in a simple yet very dramatic manner.

Incidentally, we might say, there is a fundamental error in the science of this story, which we have purposely allowed in. We would be very glad to hear from our readers giving us their point of view as to what this error is, and we will publish in our reader's columns the best answers.

"The little business man would be wiped out; all industry of every kind would be controlled by the few very rich. Oh, yes, the government might take over all industry, but would that better conditions? A government of crooked politicians, under the control of the men of money—would it be any better or even different from the control of the dollar kings? I think not.

"And think of the conditions of the poor. Their wages set as low as money-glutted dictators could make them; the price of everything correspondingly high; the workers continually on the verge of starvation—how long would such conditions last? There would be one final revolt against the autocrats, and the overthrow of all organized government.

"If the International Government is established, the time will come when everyone will jump at the turn of a dictator's finger, like so many puppets on the end of a string, and we'll have a world autocracy instead of a world democracy, with the final result, the downfall of civilization.

"But," he concluded, a fanatical gleam in his eyes, "a lot may happen in a year. I promise you, they'll never do it!" He had returned to his initial statement.

A HEAVY silence followed Demetriovich's flow of oratory, a silence that endured for more than a minute. Then Kieth spoke.

"Demetriovich," he said, "you should have been a lawyer. That stream of erudite nothingness would have done credit to any barrister. But, if you'll pardon my saying so, you are suffering from an attack of 'imaginitis'. There isn't an earthly chance of your wild predictions coming true. And even if there were, what could you do? You—"

"That's enough, Kieth!" Vachell interrupted sharply. "Alex has his opinions, and you have yours. Let it go at that."

And there the matter was dropped. No mention of it was made during the rest of our week in the mountains.

But the three of us noticed a change in the Russian's attitude. Although he had been a quiet individual before, after the altercation with Kieth he was no more talkative than a clam. He seemed to have drawn into a shell. Most of the time, he kept to himself, joining us only during meals. Any attempts that we made toward restoring his good humor were promptly rebuffed. He seemed to have been irreconcilably offended.

At the end of the week we started toward the nearest town, a small place named Byron, where we had stored our planes. There Demetriovich left us, flying west, while Kieth, Vachell and I headed east. Kieth landed in Philadelphia; Vachell and I continued on to Washington, our homes being in that city.

And that is how one of the most remarkable adventures in history began. Three scientists and a writer, a week's vacation in the mountains, an argument about the formation of a World Government—little things, yet they are the incidents that make history.

The details of the discussion between Kieth and Demetriovich are rather dry and uninteresting; the arguments of such men usually are. That discussion is incorporated into this record because of its important result.

For an entire year Demetriovich was not seen. All efforts to unearth someone who saw him after he left Byron were fruitless. He had disappeared as completely as though the earth had swallowed him up.

A year—history in the making.

CHAPTER II

A Mysterious Voice

DURING the months that followed the decision of the nations to form an International Government, a remarkable engineering feat was performed. At a point midway between Europe and North America, an artificial island was constructed. Working on the floor of the ocean, the engineers removed the tons of soil and debris that had settled there during the ages, until they came to bed-rock. There they laid the foundation for the most wonderful structure on earth.

The island, three miles long, and equally wide, a solid mass of concrete and huge duralumin girders, was built in the form of a five-pointed star. The indentations between the points were intended for use as harbors. One portion of the island was set aside as a landing field and refueling station for the transoceanic planes and dirigibles. Another portion became the site of a rather large group of houses, the intended homes of the representatives of the world. There were various other points of interest about the island that are too trivial to mention, inasmuch as they have no bearing on this record.

The really important feature of the island, and the reason for its construction, was the huge edifice in its center. This building, almost two thousand feet high, and covering a space larger than a city block, was constructed of great granite cubes and pillars. It was designed and built by the cooperating nations of the world as the home of the new International Government.

Its site, an artificial island in the middle of the Atlantic Ocean, was chosen in preference to any other suggested locality, in order to avoid showing partiality to any single country.

The island and the Union Hall—as the government building was called—were completed on April 6, 1968. Two weeks later, on April 20, the second World Conference was called at the Capitol, at Washington, D. C.

President Harwood of the United States presided. After the preliminary formalities had been dealt with, they came to the real purpose of the meeting. Harwood, tall, domineering, businesslike, arose and surveyed the assemblage before he spoke.

"Gentlemen," he said, "when we, the Chief Executives of the world, gathered for this meeting, we had a definite purpose in mind. We desired to learn whether or not our decision to unite still met with the unanimous approval that greeted it at our first conference. Perhaps some of us have come to the conclusion, during the last year that, after all, we should not unite. If there are those who have so decided, we will hear from them at this time."

The President remained standing, his eyes resting on the men before him. An air of tense expectancy hung over the room. For almost a minute no one spoke. When it was certain that no one intended speaking, Harwood broke the silence.

"Since there appears to be no objection," he began, then stopped short. He was interrupted in a most unexpected, most astounding manner. A great, roaring voice, whose thunderous volume shook the building, and set the executives' ears ringing, seemed to come from the ceiling.

"But there is objection," the voice thundered. *"I object most strenuously! This folly must stop! I warn you, if this meeting is not adjourned, and you men are not on board transoceanic liners headed for your respective countries within the next twenty-four hours, the entire world will regret it! This union will not take place; there will never be an International Government! That is my warning; obey—or take the consequences. Remember, twenty-four hours."*

THE voice ceased as abruptly as it had begun. A heavy silence fell upon the assemblage. Men stared at their neighbors, stark amazement in their eyes. What they had heard was absolutely incredible, but the ringing in their ears testified to the truth of the impossible. Eyes that had been gazing upward, lowered; the blank, unresponsive ceiling was all that they had seen.

For a moment President Harwood was at a loss for words. His face was pale, and his voice trembled when he finally spoke.

"Gentlemen," he said, "we are confronted by an utterly inexplicable occurrence. We can't explain it, but we can be sure of one thing. Either this room contained someone who shouldn't

have been here, and who is opposed to our views; or a huge amplifier is concealed somewhere." Both thoughts are preposterous, yet, one or the other must be so. In either case, however, the best thing that we can do, is to adjourn this meeting until tomorrow, and have the building searched immediately Obviously, we cannot consider obeying the ridiculous commands that we received; we'll gather here tomorrow at this time."

A moment later they filed from the room.

Within two hours, the entire world knew about the voice and its threat. An enterprising newspaper reporter had learned something about the affair, and President Harwood, when questioned, had decided to tell the facts as they occurred, in order to prevent distorted and inaccurate accounts from being published. International Radio News had received the facts from the press, and the entire story was given world-wide publicity Within two hours it was the chief topic of conversation all over the world.

When the story came over the radio, Vachell and I were seated in the living room of his apartments, a few squares from the Capitol, "listening in." The strange happenings in the International assembly aroused our immediate interest. When Vachell suggested that we visit President Harwood, with whom he was well acquainted, I readily assented.

We were about to leave, when the telephone bell rang. The President wished to speak with Vachell. After a few moments of conversation, the latter hung up the receiver. "The President wishes to see me at the White House," he said, and smiled. "You are welcome to go along if you wish," he added. I was ready to go; a few moments later we started up the street toward the Executive Mansion.

An Exhibition of Power

PRESIDENT HARWOOD greeted us cordially as we were ushered into his presence. After I had been introduced to him, he motioned us into chairs, and without preamble began talking about the subject that was uppermost in the mind of each of us.

"I understand," he began, "that you are familiar, in a general way, with the events that broke up the International Congress this afternoon," We nodded. "Still, to be certain that you have the facts straight, it will do no harm to repeat them."

Rapidly, then, he reviewed the events of the International Conference, outlining briefly that which I have recorded in greater detail. When he had finished, he continued:

"Using that as a basis for our consideration, at what conclusion can we arrive? With what have we to deal? Is it the work of an individual, a faction, or a dissatisfied nation? So far as I can see, we have no way of determining. What is your opinion, Leo?" he asked of the scientist.

Vachell hesitated before replying.

"Well," he said finally, "in my opinion, it's the work of an individual, or, what is more likely, a group. There's little chance of a nation being back of it; I don't believe that any government would risk antagonizing every other country on earth, and certainly no nation would adopt the method that this—voice is using. By the way, what was your reason for taking the action you did after you had heard the threat of the voice?"

Harwood smiled quizzically. "Frankly, I don't know. Prompt action was necessary; and I said the first thing that came to my mind. In reality, I don't believe that the warning came from someone concealed in the room; the voice had a metallic quality, indicative of an amplifier. Still, it's more probable that a man was concealed in the room, than a big loudspeaker. Yet how could a man have spoken with such enormous volume, without mechanical aid? And, whether it was a man, or machine, or both, how on earth was it able to talk from the ceiling?

"That ceiling, the entire room, and every part of the building itself, have been carefully searched, and nothing unusual has come to light. The fact of the matter is this: it's absolutely inexplicable, and entirely out of reason." And Harwood gestured helplessly.

For more than an hour the President and Vachell discussed the problem, while I was an interested spectator. The only actual result of the discussion was their decision to have Vachell and myself present at the conference on the following day. I suppose I was included for the sake of courtesy rather than for any assistance I might lend, but I wasn't greatly concerned about that.

A short time later, Vachell and I left the White House, and headed toward our apartments.

APPROXIMATELY twenty-four hours after leaving Harwood, we retraced our steps to the Capitol. When we were about two hundred feet away from the building, a man accosted us and asked what business we had in the neighborhood. Vachell explained briefly, and the Secret Service man—for such he was—permitted us to pass.

As we were about to ascend the steps of the Capitol we were stopped again, this time by an armed guard. At that opportune moment, a number of closed cars drew up to the curb, and the world's chief executives alighted. As Harwood greeted Vachell and me, the guard withdrew, and we followed the government leaders into the building.

Some time later when Vachell asked Harwood about the two men who questioned us, the President explained that the Capitol was completely surrounded by armed guards and Secret Service men, and that army planes, circling overhead were intended to prevent any possible attack from the air. Although there was little likelihood of the threat of the voice being carried out, he had said, they had decided to take no unnecessary chances

A strained tension seemed to rest upon the air as Harwood called the assembly to order. A feeling of expectancy, tinged with apprehension, made itself known to every man in the room.

As the meeting progressed, uninterrupted, the tension relaxed to some extent, and we began to feel more at ease. Evidently we thought, the voice would not make itself heard in this meeting; the guards had kept it or him away. Nevertheless, I began to feel rather disappointed; it seemed that I wouldn't experience the excitement I had expected.

We were safely past the point in the meeting where it had been interrupted the day before, no objection having been raised, and were about to adjourn, when a faint, purple glow crept over the room. Harwood, who had been speaking, became silent. A deathlike stillness fell upon us.

Suddenly, with a roar that set our eardrums ringing, a great, merthless, sardonic laugh split the silence. As on the previous afternoon, the voice seemed to come from the ceiling. After a moment, with disconcerting abruptness, the laughter ceased. Then mighty, thunderous words crashed upon us.

"How droll, how very funny! Fools with the minds of children, and you imagined that mere armed guards would keep me from this room! You, in your abject helplessness, attempted to control me!" A roaring volley of laughter rolled over us again; it ended as abruptly as before.

There was no suggestion of mirth in the giant voice when it spoke a second time; it was cold, stern, angry. *"You saw fit to defy me, to disobey my commands! I warned you, but my warning went unheeded! You'll have to take the consequences!"* Then its tones became more lenient, thoughtful.

"Still, I may be expecting too much. Perhaps, if you realize the extent of the power with which you are dealing, you'll be more willing to listen to reason. Perhaps, if you understand how utterly helpless you really are, you will think seriously before disobeying me again. I am going to give you an exhibition of my power, and then, if you see fit to persist in your foolhardy decision to unite, you must be prepared to take the consequences! But you'll never do it!

"As for my power, you are beginning to feel that, now. You seem to be growing heavier. A great weight is pressing upon you. That weight will increase until you are powerless, seemingly chained to the ground. This will be true of everyone within a radius of five hundred feet of this room. For an entire hour you'll be at my mercy, defenseless as the tiniest infant.

"But no harm will befall you; it is not my purpose to injure you unless it is absolutely necessary." The thundering words ceased.

Harwood is Defiant

WHILE the voice had been speaking, everyone in the room had been motionless, silent. Now that it had seemingly finished, I attempted to turn to Vachell. I could not! I was powerless to move! The words of the voice were true; a great weight seemed to be pressing upon me, crushing me against the seat. I could do naught but look directly ahead.

President Harwood was still standing in the same position he had held when the purple haze had spread across the room. That haze, I noticed now, seemed to be growing more intense with every passing second. Harwood strove to speak then, but only a formless mumble came from his lips. I tried to move my jaws. They were clamped together in a vise-like grip.

For an entire hour a deathlike silence, and an equally deathlike absence of motion gripped us. And for a similar period of time, we learned later, consternation and terror clutched the heart of every individual within a radius of five hundred feet of the Conference Room. Although the complete loss of control over our bodies was anything but pleasant to us, who knew its source, it was absolutely terrifying to those who knew nothing about it.

Men, walking along the street, were stopped short in midstride, as though turned to stone. The army planes circling over head within the designated radius, dropped to the earth like plummets. Fortunately, none of the aviators were seriously injured. Machines that had been darting through the streets, had their flight arrested with a sudden snapping jolt that jarred the bodies of the drivers painfully. If it had not been for the increased weight on the drivers themselves, they would certainly have been thrown through their windshields.

Finally, that interminable, nerve-racking hour passed. Like a suddenly released spring, the invisible cords that held us snapped; the purple haze that mantled the room disappeared. Then the mighty voice roared its final remark.

"You have heard my warning and command; felt my power; now heed."

While our minds strove to comprehend the full significance of all that had occurred, and we tried to restore blood circulation and freedom of movement to our cramped muscles, Harwood spoke. His voice was determined.

"Gentlemen," he said firmly, "we will pay no attention to the warning we have heard. The nations of the world cannot afford to obey the commands of an unknown dictator, regardless of what power he may possess. We will meet again in the Union Hall, at the time we decided upon, and unite our governments.

"And now, gentlemen," he added wearily, "the meeting is adjourned."

When I joined Vachell outside, I noticed a particularly thoughtful expression on his face. His brows were knitted in a thoughtful frown. I was about to refer to his meditative air, when President Harwood called to us from his car parked along the curb. We turned toward him, and crossing the pavement, entered the machine.

WE had hardly seated ourselves when the President spoke to Vachell.

"Leo," he asked, "what is your opinion of my final action in the meeting? Do you think I followed the right course, or—"

"Absolutely! You did the only thing that you could do under the circumstances. We can't submit to the dictation of one man."

"One man?" Harwood questioned.

"Yes, one man! Unless I am very badly mistaken, the mysterious dictator is none other than Alexis Demetriovich. He is probably the cleverest and most resourceful scientist I have ever met; and he has a motive for doing what the voice has done."

Then he related the gist of what had occurred in the cabin in the Alleghenies almost a year before.

"My reason for thinking it is Demetriovich," he concluded, "is the way in which he said, *'But you'll never do it!'* His first and last statement in the argument in the mountains was almost that very exclamation; and immediately after he said that this afternoon, this suspicion entered my mind. The longer I think of it, the more certain I become."

"Well, if that is true," Harwood responded, "it simplifies matters a great deal. We need have no fear of any nation revolting and starting a war."

"I fail to see where it simplifies anything, for we are still as helpless as we were before. We haven't even a vague idea concerning the source of his power. In fact, we know nothing about his activities except that which he wants us to know.

"About the only thing for us to do, is to continue with our plans as though the menace of the Russian didn't exist, except that we strive to defend ourselves in every way we possibly can. I propose that you have ten or twelve of the world's greatest scientists present at the time when the Union Pact is signed, so that we may do all that we can to combat his power. He is attempting to control us through the use of science; science, alone, will be able to fight against him.

"And in the meantime, I suggest that you have the country scoured for any information that may be secured about the actions of Demetriovich during the past year."

The President nodded thoughtfully. "It shall be done," he said.

For some time, now, the car had been parked before the building that held the bachelor apartments in which we lived; we stepped out, then, and, after a final word to Harwood, entered the house. The machine moved rapidly up the street.

CHAPTER III

The Russian's Power

THE 24th of May, 1960, was the date set for the union of the nations. It was exactly one year after they decided to unite.

Vachell and I sat near the front of the small conference room on that memorable day, with the group of eleven world-famous scientists. Before us, on the wide platform, sat the Presidents of the United States, England, France and Germany, the world's greatest executives. Behind us, occupying several rows of seats, were the representatives of all nations. The room, only a small chamber off the main auditorium, was nearly filled.

Because of the threat of Demetriovich, that roomful of men were the only beings on the island. It had been decided that, to prevent any possible interference of the Russian, they would be the only ones allowed to land. After the signing of the Declaration of World Union, they intended permitting the landing of the great host of planes of all descriptions that had gathered around the island.

Every precaution had been taken to insure the meeting against interruption. A fleet of armored vessels surrounded the great Union Star, and airplanes, like a swarm of bees, circled through the air above the island.

Still, the little gathering in the Union Hall was rather uneasy. We somehow felt that our efforts were so futile, so puny. We feared that they would prove ineffectual against the power of the Russian.

And so it was. We had hardly taken our places, when an interruption came. The great, thundering voice that we had

learned to know—and dread—roared its message. From outside the building, and seemingly high in the air, it came, stern, commanding, not to be disobeyed.

"Fools that you are, you've done it; you'll have to bear the penalty! Leave that room immediately, and come outside, every last one of you!"

Vachell leaped to his feet and faced the gathering, immediately taking charge.

"Well, gentlemen," he exclaimed grimly, "what shall we do? Shall we stay in here, powerless, while Demetriovich does as he pleases with us, or shall we go outside as he has directed? I think the latter course would be the most sensible to follow, inasmuch as we may be able to do something there. We're completely in his power anyway, it seems."

It required but a moment for us to decide to leave the room; in a few seconds we stood outside.

With one accord we turned our eyes skyward—and saw the source of the voice! High above us, hovering motionless in mid-air, sunlight glinting from its smooth, unbroken sides, was a great, metal cone. Poised high above the center of the Union Building, and consequently above the exact center of the island, it pointed its base directly toward the earth. And from that base streamed a pulsing, flickering pillar of blue radiance! Upon this, the cone seemed to be resting.

A MOMENT after we had emerged from the building, the voice had spoken again.

"I warned you that, if my commands went unheeded, you'd regret it! You've deliberately ignored everything I've said, so you'll have to take the consequences! I—" A shot rang out from one of the armed vessels, and the shell leaped toward its mark. And exploded about fifty feet from the cone! It seemed to have struck a wall of some invisible force.

At that moment, two airplanes left the main group of ships, and swooped down toward the cone in an evident attempt to wreck it, though they sacrified their lives in the attempt. Like the shell, they crashed into that invisible barrier, seemed to rebound, and fell into the sea, twin masses of flame.

The voice laughed sardonically.

"So you'd try to injure me with your feeble weapons! How droll!"

The cone tiled at a sharp angle, and a beam of dazzling, white radiance replaced the pillar of blue. It darted toward the ship from which the shot had come, and bathed it in its brilliant light. The vessel seemed to start under the impact; then, slowly, gradually, it grew transparent, wraithlike, and—vanished.

"Perhaps you will realize now, how utterly helpless you are! But enough of this nonsense! You must reap the reward of your folly!"

The cone, again in an upright position, began whirling rapidly. A circular flood of white light, similar in appearance to that which had destroyed the ship, leaped from the base of the cone, and, like an inverted funnel, spread over the island.

A pleasant tingling pervaded my being at my first contact with the rays. But as those rays increased in intensity, the tingling lost its pleasantness, and became a nerve-racking, muscle-twisting torture. Finally, when I thought I had reached the limit of human endurance, there was a sudden—snap—as though my spirit had broken the cords that had bound it to its earthly shell, the white ray vanished, and I was myself again.

Demetriovich Again!

I GLANCED at Vachell. His face, turned toward the ocean, had an incredulous expression upon it. I followed his gaze—and gasped in amazement. The ships, yachts and seaplanes that had dotted the harbors were gone—vanished. Then too I noticed that the airplanes that had been circling above us, had likewise disappeared.

We were alone on the open sea!

A sharp exclamation from Vachell caused me to glance upward. The cone was descending! It came to rest about five feet above us, and a little to the left, still supported by that blue pillar. Then a section of the seemingly solid wall of the cone slid aside, and the figure of Demetriovich appeared at the opening. He stood there for a moment, looking down at us, then he stepped off into the air. Twin pillars of blue radiance streamed from the soles of his shoes, and he floated gently to the ground.

As Demetriovich noted the expressions of amazement that must have been on our faces, he chuckled drily.

"You've seen some things that are rather surprising, haven't you?" he asked. "Yet what you've seen is only a small fraction of what I am capable of doing." He spoke in a casual, conversational tone that was decidedly annoying.

Up to this time we had been silent and motionless. But now Vachell stepped forward.

"Well, Alex," he said boldly, "you seem to have become something of a dictator recently. And your liking for the melodramatic has been developed to a surprising degree. These childish tricks you've been performing are unworthy of a scientist. Really, I'm surprised at you!"

A wave of red passed over the Russian's face, and he attempted to speak; but Vachell gave him no opportunity

"All your sensationalism is of no avail, now. There's nothing to prevent our making you a prisoner; and all your threats and promises will have been in vain. In fact—"

"Nothing to prevent you from capturing me!" Demetriovich roared in anger. "Nothing—except this!" He thrust his hand into a belt that encircled his waist, and drew therefrom, a small, metal, shining cone. He pointed the base at us, and pressed a button; and in a moment we were firmly rooted to the ground. We were as helpless as we had been in the Capitol at Washington.

"I think that's enough to interfere with your capturing me!" the Russian exclaimed. And, so far as my 'childish tricks' are concerned, I can soon convince you that what I've done is quite a bit more than that. There's no reason why I should tell you this, but at the same time, it can do no harm, for you're powerless to interfere with my plans. Besides, it may serve to convince you that what I'm doing is for the benefit of mankind and the world.

"VIBRATION is the secret of it all. You may not realize it, but vibration is everything. Life, matter, energy—all are the result of vibration. Some of you have heard of the wave theory of matter, that theory which advances the thought that nothing actually has tangible substance, that all matter is caused by wave impulses, and that the electrons and protons that make up everything, are merely electrical discharges. That theory is correct in some respects, but it is inadequate, too conservative. Vibration is the secret of the Universe, of life itself.

"My presence in the meetings of the World Conference was simply the result of a new form of vibratory effect. The force that paralyzed you in the second meeting, and that is gripping you now, is another. The protective field of force around my cone is a third; the destruction of the ship was a fourth; and the apparent disappearance of all the ships and planes, a fifth. And those are but a few of the many.

"In all probability, you, Vachell, and your fellow scientists are familiar with the known facts about the table of vibration; but since I've explored the uncharted portions of the vibratory scale, things have been changed considerably.

"As you know, vibrations of the first octave, from 2 to 8 per second, make no impression upon our senses. As for the rest, the qualities of the known octaves are as follows. The fourth to the fifteenth octave, 16 to 32,768 vibrations per second, give us sound. From the twenty-fifth to the thirty-fifth, 33,554,432, to 34,359,738,368 per second, we have electricity.

The forty-sixth to the forty-eighth is heat. Light is the result of the forty-ninth. The fiftieth, vibrating at the enormous speed of 1,125,899,906,842,624 vibrations per second, is chemical rays. The rays known as X-rays cover the scale from the fifty-eighth to the sixty-first octave. Beyond that, modern science knows nothing. You have merely scratched the surface.

"I've confined my efforts to those vibrations that have been labeled 'unknowns.' From the fifteenth to the twenty-fourth; from the thirty-sixth to the forty-fifth; from the fifty-first to the fifty-seventh; and from the sixty-second on up the scale—that has been my field of labor. I've accomplished things so astounding and revolutionary, that it would be a waste of breath to try to explain to you who know so little.

"Gravity loses its power before my rays; I can either increase or nullify its force. I've mastered light—I can vanish at will. That thunderous voice in the Capitol, and above the island a short time ago—merely the result of my control over vibration. I could enumerate one thing after another that I can accomplish with vibration, but I could gain nothing by so doing.

"In a short time, I'm going back and take charge of things, and with the help of vibrations, make a new and better world." The Russian paused a moment, his forehead creased by a thoughtful frown. Then he spoke again.

"I suppose you're wondering what I meant when I said I was going back. I'll tell you.

Lost!

"WHAT I'm going to say, by the way, involves a different phase of vibration from that of which I've spoken. To begin—you know that all elements can exist in three forms: solid, liquid, and gaseous. For example—ice, water and steam. Or, consider metals. Normally, they are solid—heat them, and they melt and become liquid—increase the heat, and they go off in a vapor or gas, like steam.

"What is the cause of this? Heat, of course. And heat is—vibration! The heat starts the electrons in the metal whirling at such a furious pace, that they become separated to such an extent that they form a liquid. At a higher rate of vibration, the electrons separate still farther, and the liquid becomes a gas.

"Now consider the whirling of an airplane propeller. Its blades turn so rapidly that they make no impression on the retina of the eye. Visually, at least, they aren't there. Of course, any attempt to place anything in the space the blades occupy, would be a failure. But suppose that, like the action of heat on metal, something would cause the electrons of the propeller to vibrate at increased speed while it was spinning, without changing its form. Wouldn't it, to all intents and purposes, become nonexistent? Yet it would still be there.

"Under the latter condition, wouldn't it be possible to place something in the path of the propeller, perhaps even walk through it, unscathed?

"At any rate, this is what I'm trying to impress upon you: it is possible by accelerated vibration to throw something into an entirely new dimension. Therefore another world exists simultaneously with ours.

"Countless worlds in fact are occupying the same space as countless other worlds. Each world, vibrating in an octave peculiar to itself, exists in space in which there are other worlds of other vibratory periods, and of entirely different natures.

"Not only did I learn that this was a fact, but, with the aid of that cone, which I built during the last five years, I've traveled from one vibratory world to another.

"When I say I'm going back, I mean I'm returning to the world with which you are familiar. At the time when my rays covered the island, and you thought the ships and planes had vanished, it was the island itself that actually disappeared, carried into the world of another vibration. And here you will remain while I remake the world of our plane.

"It may interest you to know that this world is barren, and utterly devoid of life. Because of that, I hope you have enough food to last a long, long time, for it may be years before I permit your return, if I ever do.

"But I've wasted enough time; I don't see why I went to the trouble of explaining, anyway. I suppose it was my pride in what I had accomplished.

"And now I am going; it will be a long time before you see me again. I shall be very busy."

Still keeping that paralyzing little cone trained upon us, Demetriovich in some way started the action of the blue force-rays, and rose into the air. Before entering the cone, he released us; then the door slid into place behind him.

A faint, almost inaudible hum made itself heard. It was a soft, soothing hum that grew louder with the passing moments. Slowly the cone lost its sharpness of outline, grew less distinct. A great, mocking laugh came from the disappearing cone; it hovered there a moment—then was gone!

If what the Russian had said was true, we were marooned in a barren, alien world, with practically no chance to escape. And our own world was left without rulers, at the mercy of Demetriovich and his vibrations.

CHAPTER IV

At the Russian's Mercy!

DEMETRIOVICH'S explanation of his means of accomplishing what he had, and the realization of the import of our present position, momentarily dazed us. His revelations were so stupendous, so incredible, that they stunned the reason.

Vachell was the first to recover. Facing the group of scientists and world executives, a thoughtful, serious expression on his face, he said solemnly

"Gentlemen, our world is face to face with a crisis that may mean the destruction of civilization. I know Demetriovich better, probably, than any other living individual; and I believe that all he said is true! He is not given to vain boasting; and, besides, the things that have just taken place are such overwhelming proofs that there is no room for doubt.

"This problem, the greatest in the history of the world, involving, as it does, every man, woman and child on the globe, can only be solved by clear, cold reasoning. Indeed, we may never be able to solve it, and so, may never get back.

"If we fail, gentlemen, may God have pity on mankind!" And with head bent in thought, Vachell led the way into the Union Hall.

When we had resumed the positions we had had in the Conference Room before the Russian's interruption, except that the place of the four Presidents was now occupied by Vachell, the latter continued his remarks.

"Do you realize what our disappearance must mean to the world? Briefly, it means this: The nations have lost their rulers, and the greatest scientists of earth, the only ones at all capable of fighting against Demetriovich. Gentlemen, the world is at the mercy of the Russian!

"There is, however, a remote possibility that we are still back where we belong, that the ships and planes were in some way destroyed, and that our position isn't as hopeless as it seems. Understand, the possibility is very remote, but it is worth considering. So, I suggest that we first of all learn whether or not we're still where we should be."

President Harwood arose. "That's an excellent suggestion," he smiled, "but I can't see how it can be followed out. It seems to me that we're very thoroughly imprisoned on this island."

"We have the means of escape at our disposal," Vachell returned. "If it was Demetriovich's intention to keep us here, he has slipped up, for there's a three-passenger plane in one of the hangars. I happen to know it's there, because Taylor and I visited the island with it two days ago, and left it here, returning to the United States on one of the transoceanic liners.

"I propose that you, Harwood, and Taylor and I take the plane and fly to the North American continent. Even though we are in a different vibratory world, the general geographical conditions will be the same. If, as Demetriovich said, he has taken us to a lifeless world, we had better find out at once, and if we're still on our own plane, we had better get help immediately. In any case, the first thing to do is to learn the exact condition of things."

AFTER a rather lengthy discussion, the officials and scientists agreed to Vachell's plan, and we proceeded toward the airplane hangars. I was included as one of the three, because I was an expert pilot, having served three years in the International Air Patrol.

The plane, a small, Wenger-helicopter type, a very late model with four motors, we filled with gas, and loaded with provisions and water. After seeing that everything was in perfect condition, we rolled it out of the hangar.

Finally, all was ready, and Harwood, Vachell and I stepped into the machine. The motors were started, and the helicopter propellers lifted the plane high into the air. Straightening out, we started across the ocean with constantly accelerating speed. In a few moments the Union Island had dwindled to a minute star; then it was gone.

Only one thing worthy of note occurred during the five uneventful hours of the trip across the ocean. About midway between the island and our destination, we saw what seemed to be a flashing, silver meteor darting across the sky. It was moving in the same direction that we were, or we would not have seen it; as it was, it soon outdistanced us and was lost to our sight.

Of one thing we felt sure: that flashing object, whatever it might be, was not of our world. Our hearts sank.

Finally, we arrived at our destination. I had pointed the nose of the plane toward what, under normal conditions, would have been New York City. But these were anything but normal conditions, for instead of the familiar skyline of skyscrapers, we saw a vast expanse of white, translucent glass. As far as the eye could reach, south, west and north, that monotonous, level sheet of glass continued.

Our own world? Obviously, it wasn't. But, as Vachell pointed out, neither was it a desert-world.

"Perhaps Demetriovich made a mistake," the scientist suggested, "and took us too far along the vibratory scale, or not far enough, to answer his purpose. If, as he said, there are countless worlds existing on the surface of the earth, that could easily be possible."

That, in all probability, is what occurred. The Russian had made a mistake!

Hour after hour, we continued flying, searching for an opening in the continent's roof. That there was such an opening, we were certain, for, we reasoned, the projectile we had seen flying in this direction must have gone through the glass somewhere. It certainly hadn't remained on the surface.

At last we saw that for which we were searching. Some distance ahead, over what must have corresponded with our Mississippi Valley, there was a great, circular, well-like opening in the glass, fully a mile in diameter.

A New World!

IN a moment the plane had flashed over the glass to the opening. My haste almost proved to be our undoing. As we flew out over the opening, a great, gleaming projectile, screaming shrilly, so great was its velocity, flashed almost straight up into the air.

The plane took a terrifying dip, turning end over end. Caught in a whirling vortex of air that resulted from the projectile's flight, we pitched and spun like a leaf in a gale. That we were not cast to the bottom of the shaft, a broken wreck, is no credit to me, for I had completely lost control of the machine. However, we escaped.

We were close to the bottom of the shaft when I righted the plane; a moment later, I brought it to earth. With hearts beating more rapidly, we left the machine and stared around. What manner of creatures or things might we see?

Not for long did we wonder. An oval doorway in the nearby glass wall of the shaft slid back, and a strange little creature appeared. In a general way he looked like a man, but such a man! He was only about four feet tall, and painfully thin. And that apparently emaciated, undernourished body supported a huge, hairless head that was more than twice the size of mine. The features of his face were even, regular, built on the same scale as his head, but any niceness that his face might have had was destroyed by his lack of teeth. Apparently, he hadn't a tooth in his mouth; his lips were drawn in over his gums like those of a toothless hag. When we first saw him, he had an expression of consternation and unbelief on his face.

"Well, old top," Vachell exclaimed facetiously, "this is an unexpected pleasure. We are very glad to see you; we hope you feel the same toward us."

And the little man replied! Although no words passed his lips, we received the distinct impression that he had given a mental answer. Somewhat harshly, it seemed, he had asked us what we wanted, and from whence we had come.

Ignoring the means of communication this big-headed being had employed, Vachell explained. "You see, it's this way," he said, "we've been brought to this world against our wills, and we wish to return to our own vibratory plane. It is our hope that your world can aid us."

I thought Vachell had taken leave of his senses when I heard his explanation. What would this creature know about vibratory worlds! But strangely, the big-head seemed to understand. He nodded. Then the silent communication came: "Follow me!"

Bending low in order to escape contact with the top of the little opening, we followed the strange being into his glass-roofed world.

WHEN I try to describe the wonders of that astounding land, I realize the utter futility of words. Or, perhaps the stupendous things we saw were beyond my powers of comprehension. Be that as it may, according to all appearances, we had come into a world that was fully fifteen thousand years ahead of our own in progress. Indeed, by comparison with the beings of that world, we were about as low on the scale of evolution as the pygmies of Australia are when compared with us.

Glass, white, translucent glass, was everywhere. We learned later that the entire North American continent was one huge glass house, and that all people lived, and all industry took place under one roof. There were no streets as we know them; great lifts and overland cars, propelled by a type of vibratory force, connected all parts of the land. And everywhere were those disproportionate figures, scurrying here and there like so many busy little ants.

We followed our host or captor, whichever he was, through the throng of big-heads that had gathered around us, into one of the numerous lifts. With breath-taking speed we were borne upward. When the elevator came to a halt, we left it, and moved along a glass hall past rows of oval doorways. They were exactly alike, with nothing to identify them so far as I could see.

The little big-head seemed to know his destination, though, for he paused before one of the ovals, and pressing a little button, led us through the doorway into the room.

This seemed to be some sort of work-room, for it was filled with intricate machinery, and, to us, utterly meaningless devices. What the purpose of it all was, we never learned. Everything, by the way, was constructed of the same white glass.

Our guide stopped to confer with one of the workers for a

moment—at least I suppose inaudible communication passed between them—then he continued on across the room. At the far side, we passed through another oval, and stood within the room that was our destination.

This room was entirely different from any we saw during our stay in that vibratory world. Its walls were a dull, opaque black; yet, paradoxically, from them seemed to come a strange, opalescent radiance. The room was bare, devoid of any furniture except for a small platform in the center, upon which stood two small, short-legged stools. Between the stools was a most intricate and complex device, from which wires led to one of the walls.

A Strange Experience

AS the big-head commanded Vachell to be seated on one of the stools, the latter eyed the strange device between them rather dubiously. "What'll it do—whatever your name is?" he asked hesitantly.

"It is a device for visual thought transference," came the mental reply, which all of us caught. "It will do you no harm. I have no name; I am known by my number, 28L37426X9108A-27." And again came the command for Vachell to sit on the stool.

After the scientist had mounted the platform and seated himself, 28L—as we thought of the big-head after that—placed a strange glass hood over Vachell's head and eyes, and a similar device on his own huge cranium, and settled back on his stool.

I shall never know, except in a general way, what thoughts passed between those two minds. Vachell, some time later, outlined briefly what had been asked of him, and the answers he had given. It is from that outline that I have my information.

When the two were seated, Vachell was directed to form a mental picture of all that had happened in connection with our coming to that world. He began at the beginning, with the week the four of us had spent in the hills, and, step by step, went through the entire story up to our arrival in the glass city. When he had finished, he pictured the world in a state of chaos and devastation as the result of Demetriovich's assumption of authority, and his subsequent mismanagement of the nations. And finally, he made a plea for aid in returning to our vibratory plane, and fighting against the Russian.

Vachell, after a few moments of waiting, received a thought picture of himself making his plea before a strange, monstrous creature who seemed to be nothing but head. So far as Vachell could see, the creature consisted of a great, fleshy, spheroidal mass, covered by a dead-white membrane, unbroken save for two huge, lidless eyes near the top, and a small, red orifice at its base. The thought was repeated; then 28L raised his metal cap, and bade Vachell do likewise.

At the big-head's direction, then, the three of us seated ourselves on the platform that he and Vachell had just quitted, facing the wall that was connected with the thought-transference device. Suddenly the room was plunged into darkness, the walls no longer emitting their opalescent light.

As we sat there watching, waiting, we heard—no, rather sensed, a vast, roaring, rushing sound, a somehow orderly chaos, as though all vibrations of every octave were loosed at once—concentrated—hurling themselves through our minds. Then, from the black wall before us streamed a brilliant radiance, flecked with minute, darting lights. In some unnatural way it seemed to pass through us, as light streams through a window pane—as though we were transparent!

THEN slowly, but with ever increasing rapidity, we began to move forward! The wall opened up before us into a light-flooded, unthinkably vast tunnel. Along this tunnel we moved, swept on by that cosmic hurricane of sound.

But were we moving? I cannot say. Paradoxically, I seemed to be seated on that platform in the room—and yet, seemed to be moving miles and miles out through that tunnel of sound, that tumult of vibration. I hesitate to record this, but—I gained the distinct impression that I was at one and the same time, seated in the room, and yet was—stretched—through the miles of the tunnel's space.

Gradually the tempestuous roaring lost some of its force; slowly it abated, and—died. And our own movement through the tunnel ceased. Then, as never before, I was conscious of that utter annihilation of distance, that inexplicable projection of myself across the miles.

The tunnel had ended in a great, dome-ceilinged chamber. In the center of the chamber, floating stationary in midair, was a cloud of mist. As we entered the room, the mist, swirling and twisting, drew aside, revealing the white-skinned, bodyless brain-being.

As we stared at the amazing spectacle in awe, we somehow felt that we were in the presence of infinite wisdom, of unparalleled knowledge.

"God!" exclaimed Harwood in a hushed whisper, for the first time breaking the silence. "Can all this be—" The whisper died on his lips as the mist that had surrounded the brain-being drifted down and encircled us. It seemed to gather around, and congeal upon Vachell; arose, then, with the scientist in its grasp, and swept up toward the entity from which it had come; bore him, or the strange projection of him—for he was still beside me in the black room—entirely enveloped by itself, up, up, until he was face to face with the super-intelligence of that vibratory world.

As Vachell described it later, he experienced a singular draining sensation, as though all knowledge, all power of thought was being drawn from him. This endured for a moment; then Vachell was replaced at our side.

Back to Their World

WE returned to the room by the same path over which we had come. We seemed to remain stationary, shrinking while the tunnel whirled past us. And finally, that unnatural extension of each of us was no more; and we were back in the lightless room, facing the blank, black wall.

I cleared my throat to speak; heard Harwood stirring restlessly; Vachell laid silencing hands on our shoulders.

"Not yet, Taylor, Harwood," he murmured. "More to follow."

Tensely we waited, scarcely breathing. Then a dim, luminous haze appeared where the tunnel had been. That haze grew—resolved itself into an image of the brain-being. The picture dimmed for a moment, vague, formless; then, in its place we saw—ourselves, each surrounded by a colorless cloud of misty light! Behind us, less distinctly outlined, were those who had remained on the island, similarly surrounded by nebulous clouds of radiance. In the hand of each of us was clutched a long, slender, metal rod with a white glass ball at one end.

Then we saw Demetriovich's cone sweeping down, a white vibratory ray darting toward us. The ray, striking the clouds that surrounded us, was either deflected or nullified, for it accomplished nothing. And then, from the balls on our slender rods flashed beams of almost invisible force. They came in contact with the cone, and burned through and through it. It crashed to the earth, riddled with holes, a useless wreck. With that the image vanished; and in a moment the room was again flooded with light.

28L gave mental expression to his approval as he led us from the room. When we were alone in the quarters that the big-head assigned to us, we likewise gave expression to our satisfaction and joy, but in a far more demonstrative manner. The Russian and his works would be destroyed, and the world would be saved! Not once did it occur to us to doubt the ability of these creatures to do what they promised.

Harwood had taken little part in our rejoicing. When Vachell questioned him about this, he replied:

"I'm in a sort of daze, that's all. The utterly astounding things that have occurred since we've come here, have thrown me a little off balance." He smiled ruefully.

"Harwood," Vachell counseled earnestly, "don't let these things affect you. I know, even better than you, how incredible they are; they contradict all known laws of science. I cannot explain what occurred, so I do not try. And I've seen things that neither of you are aware of."

I SHALL record little of what took place during the three weeks that followed, while, for some unaccountable reason we heard no more about our return to our own world. 28L, who, by the way, was one of the most important individuals in their world, conducted us, by means of the tunnel of sound, to some of the most interesting spots on the continent. Those trips, and the countless mechanical and architectural marvels we saw, have been recorded in detail in the joint work of Vachell, Harwood and myself, "The World of Another Octave."

At last those three weeks of impatient waiting passed, and one morning shortly after we had arisen, 28L came to us with the news that we were to return to the island that day.

Impatiently we followed him through a labyrinth of passages and lifts to the well-like opening in the glass roof. As we passed through the oval door into the open air, we saw a long, comparatively slender cylinder, constructed of the same white material as everything else in that strange land. A series of oval doors ran along one side of the machine; 28L led us through one of these.

I make no attempt to give more than a general description of the wonders we saw in that white projectile. Their amazingly complex nature gave them an air of unreality. Towering masses of whirling machinery—great, spinning fly-wheels—devices whose strangeness beggars description—the vehicle was filled with these.

In the center of the floor of the projectile, running its entire length, was a yard-wide strip of pale blue glass. 28L bade us stand on this, mentally explaining that it was the machine's center of gravity, keeping us fast to the floor regardless of what position the projectile assumed.

When we had followed his directions, and were standing on the strip of blue, which held our feet in a vise-like grip, there was a sudden lurch, a breath-taking burst of speed, and the projectile settled down to an even, forward motion.

Our flight by plane from the island to the opening in the glass had taken eight hours; the return in the projectile was accomplished in little more than one. We did not know our journey had ended until 28L opened one of the doors, and indicated that we should step out, for we had no way of determining how fast we had been traveling.

Just before we left the vehicle, two big-heads came forward with the metal rods that would be our weapons, and the glass bands that were to form our ray-repelling auras. After we had divided them among ourselves, Vachell addressed 28L.

"Is the cylinder going back with us?" he asked.

"No," came the silent reply. "Our bodies are too frail to bear the strain of the journey. All of us who have attempted it, have failed to return. And now, if you'll leave—"

A moment later we stood outside the projectile; the door was closed; and the great, white cylinder rose into the air. Standing among the world executives and scientists who had gathered around us with words of greeting and inquiry on their lips, we followed the projectile's flight with our eyes.

It shot straight up into the air for about four thousand feet, then stopped short and hung stationary, its end pointing toward the island. A moment later a blinding beam of radiance streamed from that end, and spread over the Union Star. For a second time we felt that torturing tingling. More and more unbearable became the vibration of the atoms of our beings—then there was a sharp snap—and the projectile had vanished.

We had returned safely to our own world!

CHAPTER V

A Strategic Plan

FOR almost an hour after our return Vachell talked, relating all that had transpired since the time we left the island.

"And finally, gentlemen," he concluded, "those men of that other world, using a method somewhat similar to that of Demetriovich, sent us back to our own plane."

The scientist was silent for a moment; then, holding one of the glass bands and slender, metal rods in his hands, he spoke again.

"Now, gentlemen, before we do anything else, I think we had better prepare for our defence. Each of us will place one of these bands around his waist, and arm himself with these little rods, for we don't know when we'll need their protection."

Harwood and I distributed the bands and rods while Vachell demonstrated how they were to be used. Then, while the rest were engaged in placing their bands in position, I inspected mine with greater care than I had been able to exercise before.

The band, I saw, was a simple affair, slightly oval in shape, and just large enough to fit snugly around the average waist. About four inches high it was, and about half that in thickness. It reminded me of a great, glass wedding ring, with its surface smooth and unbroken save for a knob on one side. When this knob was turned, the band began its work, surrounding its wearer with a protective aura.

A few minutes after the bands had been distributed, we presented a strange appearance. Each of us was standing in the heart of a wraithlike, transparent cloud that extended about six inches from all sides of our bodies. We seemed to be radiant, glowing.

One of the executives raised the question as to what was to be done next. In a moment, the members of the group were busily discussing what would be the best plan to follow. Some suggested that we wait for the Russian to make the initial move; others were in favor of sending out a plea for help over the radio transmitter that was on the island.

We had debated this question for some minutes without result, when a sudden exclamation from one of the scientists caused us to look around. We followed his pointing finger with our eyes.

High in the eastern sky, we saw a tiny, black speck, rapidly growing larger. As we watched, it resolved itself into a small, one-man helicopter. It was over us; was going past—then it seemed to hesitate, and in a long, slanting drop, flashed down toward the island.

It landed on the opposite side of the Union Hall. With one accord we raced around the huge structure. We turned a corner, and came face to face with—Kieth! Allen Kieth, the astronomer who had been the fourth member of our party in the Alleghenies.

HE greeted us with an expansive smile and an outstretched hand. Such relief I had never seen written in a man's countenance.

"Gad, but I'm glad to see you!" he exclaimed. "You can't realize how much the nations have missed you. The Russian told the world that you had all been annihilated, utterly wiped out. And we did see you disappear—but you're here again! But—but—you look strange—as though—" his voice trailed off into silence, and he stepped back and stared at us wonderingly.

"It's a long story, Kieth," Vachell told him, "too long, in fact, to relate in detail now. We did disappear, and so far as this world is concerned, we were annihilated, blotted out. I'll tell you in a general way what occurred, without trying to explain its causes. You'll have to accept my story.

"By the way, you needn't stare at us like that; we're not ghosts. This aura that surrounds us is there for a purpose!"

(*Continued on page* 1038)

The Sky Ruler

By Ed Earl Repp

(Illustration by Paul)

Slowly but surely the ship was being drawn down. Black dots appeared in the air directly below her, that turned out to be bulging parachutes. The guns from the ship roared again.

THE SKY RULER

By the Author of "Beyond Gravity," "Radium Pool," "Flight of the Eastern Star," etc.

IF man could learn to control the laws of gravity he would find himself master of the universe! He would find himself on the threshold of the last frontier—space!"

Dr. Mars Jorgstedt, noted astronomer, finished, and as he sat back in his big roomy chair in the lounge of the Scientists' Club, he gazed at his friend defiantly. His feelings concerning such a possible achievement must have been really deep, for his gray eyes glittered with a peculiar light.

To Professor Markleson, head of the American Institute of Physics, sitting opposite, Dr. Jorstedt's eyes seemed like smoldering cauldrons in which intense fires burned.

For a long time Professor Markleson studied the deep-set features of his friend, pondering over the words just uttered. Not for two years had these two old friends come together, for Dr. Jorgstedt had secluded himself with the huge telescopes of his observatory, located at the mouth of the Grand Canyon. Now they were together again and the famous physicist noted the appearance of many new lines prominently stamped upon the features of his friend. Markleson leaned forward, apparently to guard something he had to say from unwanted ears.

"Suppose, my dear doctor," he said, casually, "that such an achievement has been realized?"

Dr. Jorgstedt regarded him quizzically as though trying the impossible—to read what lay behind the smiling, dancing brown eyes of the man before him. He shrugged his shoulders.

"It would create a world-wide sensation, professor!" he said, moving a hand from his chin to toy with a delicate watch-chain.

Professor Markleson glanced around him and then appeared to edge close to his friend.

"And if I, of all men, should have learned that secret, what would you say, doctor?"

The noted astronomer gave him a startled look, his lips twitching oddly as he pondered the strange, cryptic words. They impinged upon his senses over and over again like the clanging of a great tower clock tolling off the hours.

"Then, my friend," he replied, admiringly, "you would be even a greater genius than you have already proved yourself to be! Have you been holding something back from the world, professor?"

Professor Markleson settled back in his chair and smiled, a red flush mounting above his spotless collar and spreading behind his ears. He nodded.

"I hold the secret of gravitational repulsion, doctor," he said, softly, vaguely aware of the flush that had mounted his face at the compliment his friend had handed him. "The problem of nullification has been mastered, although I have kept the news strictly to myself until now!"

Dr. Jorgstedt sat for a long time staring at the physicist. The revelation had dumbfounded him. Had such a statement come from the lips of anyone but Professor Markleson he would have quit his presence at once without further ado. And since his friend had informally announced the results of his research in the field of gravitational nullification, it awed him a little.

"Under those circumstances, professor," he said, "how do you propose to utilize your wonderful discovery?"

Professor Markleson leaned forward again.

"Not how I am *going* to utilize it doctor," his reply came, clear and convincing, "but how I have *already* embodied the principles in the greatest airship ever built!"

ED EARL REPP

As a writer of adventure tales that carry you along breathlessly from page to page, Mr. Repp has few equals. The present story is one of his best. It combines not only excellent imagination and stirring drama, but also an ending that is so surprising that no one will suspect it until he has finished the story.

"Who is the mysterious Sky Ruler?" you will ask. Who is this self-styled dictator of the air who with his strange powers can hold the world at bay? The secret mystifies the world and the answer is known only when the last lines of the story have been read.

HAD Doctor Jorgstedt been subjected to a charge of high potential electricity he could not have been more startled than he was now at the rapid-fire occurrence of important achievements in the life of his old friend during the past two years. Then his brows clouded in disappointment, for he recalled Professor Markleson's old vow that if he should ever solve the mystery of gravitation the first thing he would do would be to construct an interplanetary ship to carry both of them to distant planets for explorations.

"Then you have altered your plans to build a space flyer, professor?" he asked, seeing his hopes of visiting Mars and other worlds of the solar system go waning, temporarily at least.

"I have for the present, doctor," the physicist replied, nodding. "But not my vows, to make it possible someday for you to place a foot on the worlds of your telescopes. I have built an airship embodying the principles of gravitational repulsion to illustrate the possibilities of craft capable of rising from the earth's surface without expensive propulsion. In my opinion, man needs cheaper and more rapid transportation more than he needs knowledge of the universe at this time when the old type of aircraft are becoming too slow for his increasing demands for speed with the maximum of safety. We shall therefore have to forego our personal hopes to navigate infinite space until our fellow beings have first been given the benefits of my discoveries in a way that will do them the most good. In the meanwhile, Mars, Venus, Uranus and the others will not disappear!"

Doctor Jorgstedt laughed a tense, deep-throated laugh that caused the eminent physicist to stare at him curiously.

"I guess you are right, my friend," he said, "but I confess I'm a trifle disappointed. For an instant my imagination pictured us as the first human beings ever to set foot upon the soil of a distant world. However, let me be the first to congratulate you upon your discovery! Then, if you don't object, you might enlighten me with some of the high lights concerning the manner or methods with which you achieved such an important step. Your propulsion principles, of course, must depart from the present principles of the airscrew?"

Professor Markleson nodded and settled back in his chair, resting his elbows upon the arms and pyramiding his fingers, tip to tip.

"After it was done, doctor," he said, simply, "I was astonished at the simplicity of the whole thing. I merely grasped a

few old time principles, made a few changes and amalgamated them together with an idea or two of my own. The result was that I discovered an alloy of metals comprising, besides the three well-known elements iron, nickle and cobalt, the new metal hydroleum, which, when subjected to certain treatments applied by electrical energy, becomes highly magnetized. Personally I had not given much credence to Einstein's theories of relativity, so you can imagine the shock I received when I found that the alloy, under the influence of magnetism, when placed in the air over my work bench, remained suspended! This proved beyond a doubt that gravity and magnetism, when successfully applied, are precisely the same thing as expounded by Einstein."

"I have heard much talk about relating the two," Jorgstedt said, smilingly. "Just *what* do you mean in your case? Have you discovered perpetual motion?"

"I can understand your doubts," Markleson nodded, *"I have not discovered perpetual motion.* What I have discovered is that it is possible to put into my metal electrical energy that will give it the power to oppose or nullify the force of gravitation. That simply means that instead of carrying great quantities of explosive energy as rockets do in order to get away from the earth, I fill my metal with electro-magnetic energy which increases the weight of the plates but little."

"I understand," Jorgstedt nodded. "Please go on."

"I set to work immediately," Markleson continued, "to build a model airship with a hull composed of the alloyed metals. To this I attached a thousand feet of wire. I then electro-magnetised the miniature ship and it rose at a tremendous speed to the full length of the line, which snapped, releasing the model from the leash! It vanished at once into space, like a stone falling off a cliff. But I discovered that, in rising, the model wabbled, gyrated and corkscrewed upward like a drunken thing. Then I constructed another model, in which I allowed only the central section to accept the magnetic influence by insulating the nose and the tail against it. This one went up on even keel without a single gyration. I found that by using an added current control, I could raise it and bring it down at will.

"Needless for me to say work was begun at once on the construction of a full-sized airship. During the first stages of the work I arrived at the conclusion that the present day air-screw would not be powerful enough to propel such a hulk through the air at the rate of speed I desired it to attain. From then on I grasped at Professor Goddard's rocket drive scheme and developed it quite to my liking by making several radical changes in fuel and the driving exhaust systems.

"As a result, I have created a ship whose capabilities and possibilities are far beyond the conception of ordinary man—one whose speed is unlimited and whose power to rise to the higher altitudes will be unchecked even by the tremendous attraction of the earth's gravitational forces! Even now the craft is ready for her maiden flight into realms of speed and space never before attained by man-made machinery!"

PROFESSOR MARKLESON abstractedly pulled a pipe from his pockets and proceeded to fill it. Dr. Jorgstedt sat like an image in stone, and continued to stare at him until the aromatic fragrance of the other's curling smoke caused him to light a pleasant cigar. For a few silent minutes, he seemed to resign his thoughts to the satisfying odors that emanated from it. He puffed upon it rapidly at first, then settled down ostensibly for a peaceful smoke, although his mind was far from it, as Professor Markleson could easily see. Then Jorgstedt turned again to the physicist.

"My friend," he said, regarding him speculatively, "If your discoveries are what you say they are, then I bow my head to you—the master of the universe!"

Professor Markleson's rather heavily built frame shook with almost silent laughter that was mixed not only with the satisfaction of having his friend compliment him, but with perfect confidence in what he had achieved. It was a peculiar characteristic of him to laugh thus when he had solved some tremendous problem, as Dr. Jorgstedt had long since learned to know.

"A thousand thanks for the title, doctor!" said Markleson, his eyes twinkling. "But I think you had better save it until I have actually conquered the universe. That's a lot of territory for one man to be master over!"

The astronomer nodded and grinned behind the pale blue haze.

CHAPTER II

The *Sky Urchin*

FOR nearly two years the *Sky Urchin* had been under construction under the watchful eyes of Professor Markleson, and during all that time he had kept it a perfect secret from the world. With the exception of a score of under-scientists from the American Institute of Physics whose hands had built it, Dr. Jorgstedt, and two high government officials, not a soul had been given an inkling as to what was taking place behind the walls of a hangar on the scientist's residential grounds.

Now the moment had arrived for the greatest airship in the world to take off on its maiden flight with a passenger list made up of a few privileged scientists, government authorities and a number of the world's foremost newspaper editors. Throngs of reporters circulated around it on the ground, snapping pictures right and left, but none were permitted to enter. Armed guards furnished by the government stood ready to halt any person who could not display a pass signed personally by Professor Markleson. Even government officials were no exception to the rule established by the scientist as a precautionary measure when he issued the invitations for the maiden flight. He was taking no chances on having some over-eager reporter or photographer snap a flash-gun with in the *Sky Urchin's* huge, cigar-shaped hulk, probably wrecking it as a result. The fuel for the exhaust drive systems was highly explosive, though stored in such a way that it was safe from ordinary exposure. Yet one never could tell just what an ambitious newspaperman might do to obtain an interesting picture.

The *Sky Urchin* stretched across the private landing like a great silver cigar, with two transparent bands, one on each end midway from the center. These insulated the craft so that its magnetic influence would concentrate in the center between them, thus establishing perfect stabilization. Looking through the bands one could see the interior of the craft's control room, bridge and foreward observation decks. At the rear end, under the band, was a comfortable lounging cabin of three transparent decks, lavishly appointed with large, easy chairs. A row of round, porthole-like windows lined either side of the huge polished metal hulk. At her tail, giant stabilizing fins arose like the blades of some tremendous windmill. Two sets of laterals and ailerons of shining metal protruded from the ship's rear, giving one the impression of looking at some great stream-lined creature of the ocean depths with double tail-fins.

It was a thing of flashing beauty, although, without the customary gondolas and gas bags so common in ordinary airships, it seemed bound eternally to earth. But had the observer stopped to consider the intricate lifting apparatus enclosed within it, he would have conceded at once that the *Sky Urchin* was indeed a craft to be marveled at. And had the comparatively small driving exhausts located between every two of the rolling stabilizers been studied by one skilled in rocket propulsion, the huge ship's powers of speed would have immediately become comprehensible.

PROFESSOR MARKLESON'S craft marked the greatest step yet attained by physical aviation science. It surpassed

any other craft, plane or ship, in the world, and at once appeared to establish the United States as foremost in the field of aviation.

Now with the sun at its zenith sending down warm, brilliant rays, the *Sky Urchin* was ready to take the air. The passengers had gone within to sit in the control room to watch Professor Markleson and his crew of five choice men take the ship upward. Strange to say, Dr. Jorgstedt was not among them, and the scientist, at first, had displayed disappointment at the failure of his friend to appear in time for this epoch-making event. Then he concluded that some unforseen obstacle had arisen to prevent the famous astronomer from appearing on the scene. He finally dismissed his disappointment with a shrug and centered his attention upon preparations for the take-off.

There came an ominous hush over the huge ship as Professor Markleson took up a position at the controls. Outside, camera-men were grinding out reel after reel. Press camera-men raced hither and yon to gain advantageous points to "shoot" the glistening air cruiser from every conceivable angle. It was the scientist's intention eventually to permit the world to know also what the interior of his ship looked like, but not quite yet—not until after the maiden flight had taken place, and all the details had been safely placed in the archives of the United States patent offices. Then the camera-men would be allowed to go through the *Sky Urchin*—perhaps!

Professor Markleson peered at the dials in front of him and glanced through the transparent band. From his position on the control bridge high up toward the forward curving that brought the ship's nose to a pike-like point, the scientist could see scurrying figures darting here and there along the ground. He pulled on a cord and a high-sounding siren shrieked for field clearance. At once he noticed the armed guards running away from the ship's polished sides to take up positions with the camera-men near the walls of the hangar.

The passengers, seated upon comfortable, stationary benches well away from the controls, seemed numbed into quietness. They watched each single movement of the scientist as his hands touched the various controls. They watched him pulling gradually upon a throttle scarcely larger than the grip of a man's hand. Then they became aware of an increasing drone surging through the ship's hull. The edges of the central section of the hulk along the transparent band seem to glow with a purple luminosity. The guest scientists watched it with puzzled interest and the various newspaper editors began jotting notes upon whatever papers they could find in their pockets. Contrary to popular conception, newspapermen do not carry notebooks ready for instant use but rely on memory, which under ordinary conditions, serves the purpose adequately.

There were a score of stunned personalities on board the *Sky Urchin* when it was discovered that the craft had already left the earth! Professor Markleson grinned with amusement at the sudden astonishment on the faces of his guests. He glanced around at them, his eyes aglow with excitement. Thus far the *Sky Urchin* was a success!

Strange Forebodings

WITH scarcely a tremor it had risen from its resting place on the surface. Markleson had merely manipulated certain instruments and the great craft had responded to the touch of his capable hands. Now it floated two miles above the field, its nose pointed westward, as steady and rigid as if it lay at rest within its hangar. Superb, a thing of glistening beauty, the monster hovered in the sky.

"Take a look, gentlemen!" Professor Markleson invited. "The field below appears no larger than a square emerald setting in a man's ring! Rather a pleasant take-off, eh?"

Blue sky stretched beyond. Below lay the earth, criss-crossed with ribbon-like thoroughfares, squared with checkerboard patches of green and brown, interspersed here and there with conical spires that seemed like infinitesimal needle points in comparison with the vastness of the visible terrain. The passengers peered in all directions, plainly hypnotized by the sudden, unexpected rise and the glory of the scenes on all sides. The realization that here at last was a revolutionary step in aerial transportation stunned even Professor Markleson himself, and it was with keen delight that he listened to the praise that was at once heaped upon him by those who appreciated his astounding achievements.

He turned presently to the controls and ordered his picked crew to various stations within the cabin. The *Sky Urchin* seemed to heel earthward as the propulsion units went into action, yellow jets of flame spitting rearward from the exhausts between the stabilizers at the tail. The exhausts began a gradual roar that soon gave way to a pleasant, lulling hum.

As the craft's nose dipped earthward under the recoil of the driving exhausts, Professor Markleson swung the aileron controls slightly upward by turning a small wheel within a larger one. Instantly the *Sky Urchin's* nose lifted skyward. The passengers, suddenly tensed by the unexpected plunge, breathed in relief.

"I don't believe the recoil can be overcome, gentlemen," the scientist said. "There's bound to be some reaction upon the ship when the propulsion exhausts are thrown open. I found it difficult to change the recoil to a slight downward plunge rather than the straight ahead jerk that would ordinarily happen. Yet it was more gentle than I had anticipated!"

The great scientists strode over close to the transparent band and looked out. Far below, the terrain was slipping past in a brown blur. Scarcely an object was recognizable at the terrific velocity under which the *Sky Urchin* was speeding through the air before the constant explosions from its propulsion exhausts. The passengers stared at one another, their eyes twinkling with satisfied lights. At last science had conquered gravity and speed as well, for the craft had risen by neutralizing and repelling the earth's gravitational attraction, and here it was, scudding through the heavens like a projectile hurled from some huge, powerful rifle!

AS it raced across the arched dome of blue at an altitude of five miles, the *Sky Urchin* was subject to scarcely a bump. The air seemed much smoother here than in the heavier atmosphere below. As confident as a captain standing at the controls of some great ocean liner, Professor Markleson watched the dials in front of him and smiled as he made occasional readings of velocity, altitude, gravitational pull, resistance and internal oxygen pressure.

Then, somehow, the scientist experienced a vague premonition of something untoward. What it was he could not define. He felt certain that the perfect functioning of the ship would not cease and thereby crash it to earth. He tried to shake off the feeling, but try as he might, he could not shun it. It was as though a sixth sense warned him that danger lurked near. He had a strange sensation of being watched from some invisible source. Yet despite the foreboding that was marring an otherwise perfect flight, he smiled and did not allow his anxiety to reach those who depended upon him for their very lives. He glanced around to read the faces that were arranged within the cabin. Perhaps here he would find the eyes that penetrated his being and caused him to shudder inwardly. But no—the faces were smiling; none were looking at him directly. Each man was either engaged at jotting notes or conversing softly with his nearest neighbor. The government men were looking out through the band, and talking earnestly. The five men, all students of physical aviation and well-known to the scientist, were attending to their own business at their posts. Strangely the feeling persisted upon him and as the *Sky Urchin* plunged through a mass of fleecy clouds, it grew gradually to certainty. *Someone was watching him intently,* no trying to avoid realiza-

tion of the fact! He felt it in his bones, his subconscious mind told him, he knew it. That was all!

CHAPTER III

The Raid!

WHEN Professor Markleson suddenly felt a gentle pressure, as of a revolver, in the small of his back, he was not surprised. He expected something like that, though the feel of the blunt nose of the weapon made him try to turn his head to get a glimpse of its owner. Not a word had been said. The scientist had merely heard a sudden scramble of feet upon the cabin floor and then felt the gun poked into his back. No other sound except one high-pitched chuckle was audible above the hissing of the *Sky Urchin* as it shot across the sky. That excitement ran high he could tell by the heavy breathing of the man behind him and the occasional grunt of another.

Then the man behind him spoke with startling suddenness, in a voice that sounded vaguely familiar to Markleson. If he could but look at the figure of the man who he felt confident was masked, perhaps he could tell the identity of its owner. With his hands gripping the controls tightly he found himself wondering what sort of deviltry was going on. With difficulty he restrained a wild urge to swing around and face the man behind him. Two things prevented him—the thought of the *Sky Urchin* hurtling through the air out of control, and the firm pressure of the pistol on his back.

"Mighty sorry, professor!" the voice stated, bluntly. How the voice startled him! For an instant he thought he recognized it, and he pondered over it. No, that could not be Dr. Jorgstedt's firm voice! Hardly! The man continued: "Just throttle her down, old top, and float her in the air. Don't try anything foolish or we'll have to drop you! Every one of you is covered. I've five men here and five searching the ship for any other passengers."

Without hesitation Professor Markleson slowed down the velocity of the *Sky Urchin*. His mind was blazing in a wave of resentment as the indicator told him that the craft's speed had diminished rapidly until it was barely making headway. He glanced through the observation band. Far below lay a great expanse of flat terrain, some far-flung frontier of the middle west. Behind him he heard a sudden scuffle—then a sickening thud. One of his passengers had probably slumped to the floor, slugged for attempting to make a break. He shot a sidelong glance at the government men standing over to his right. They stood stiffly, hands raised above their heads. As though nothing out of the ordinary was taking place, the crew stood at their posts, faces in front of them, fearful of turning around.

"Now, professor!" the man behind him said, a mischievous chuckle in his voice. "Just hand over those papers that you have in your inner pocket. I'll take care of the plans and details of this ship from now on!"

Professor Markleson felt suddenly sick—a nauseating sensation surged through his vitals. Had not the control wheel been of stiff, rigid metal, his grip would have torn it loose from its mooring. He swayed slightly like a man in a daze and his lips, now tightly drawn and purple, trembled.

"I—I—haven't got the plans with me," he said, lying. "They were sent to my vault this morning!"

He felt the man's eyes boring into his back as the pistol was snapped in a tight, significant grip. Then the raider laughed sharply. It made the scientist wince, for it dawned upon him that a very dear friend had laughed just like that not many hours before.

"You're a mighty poor liar, professor!" the man with the pistol replied, shoving it more firmly against his back. The scientist tensed, expecting to feel a bullet plowing through his flesh.

A GLOVED hand swung over his shoulder and slid between his jacket lapels. It came forth with a sheaf of soiled papers. They crinkled softly as the man's gloved fist closed over them in a firm grip. The raider chuckled humorously and bent close to the scientist's ear.

"I thank you, professor, most sincerely for your generosity!" he hissed. Professor Markleson glanced sideways and beheld a masked face from under which the neatly trimmed point of a gray Van Dyke protruded. The scientist stiffened, opened his mouth to speak, thought better of it and smiled grimly. If the man actually was Dr. Jorgstedt, the world should never know through his lips that his friend had degenerated. He glanced at the earth inductor compass to hide a surge of hot blood that flooded his face. The *Sky Urchin* was now hovering over the flat, brown terrain, like some great silver mammal suddenly shorn of its power to go on. Its nose was pointing due west toward a dim outline of distant ranges. The sun, like a huge ball of boiling metal hung low in a sky that was shot with streaks of gold-edged clouds. The masked raider, who, the scientist concluded, was the leader of the gang, spoke again.

"I thought a man of your calibre would have better sense than to carry his plans with him so loosely. But your laxity is quite pardonable, due to the excitement, I presume, of taking the ship into the air. Perhaps this episode will teach you a lesson. Now lower the ship to a landing! You and your friends are going to leave it!"

Professor Markleson was at the point of making a hot reply when suddenly the blunt pistol was jerked from his back. It exploded in his ear like a crack of thunder. He heard the thud of a body striking the floor, and looked at the government men. One of them lay in a heap, an automatic clutched in a grip of death. The top of his skull seemed to have been cloven. The raider's pistol once again nestled snugly into the scientist's back. The man laughed.

"Self-defense on the last frontier!" he chuckled. Loud guffaws followed from the throats of his confederates. "The law of the air is the law of the gun, my dear professor! And the air belongs to him who takes it! I take it in the name of—"

"Doctor—" began Professor Markleson. But he changed his mind and spoke no name. Instead he said quietly: "I suppose your trip to Mars will be realized now, eh?"

The raider's boring eyes seemed to study the back of his head for an instant.

"Mars?—Mars?" the man asked, puzzled. "What in hell would a man want to do on Mars? But its a mighty good suggestion, professor!"

"Anyhow, I think you are a dirty cad, my friend!" the scientist hissed between his teeth as he swung a small lever that placed the *Sky Urchin* under a gentle influence of the earth's gravitational pull. It began to descend slowly but steadily. The masked raider chuckled.

"I've been called worse things than that, professor!" he said, curtly. "So I take no offense at your mild epithet! I don't like to kill a man in cold blood anyhow. But I advise you not to interfere with us now or in the future!" He bent his masked face close to the scientist's ear again and hissed: "If you do, I'll blast you from the face of the earth!"

"If it were not for the lives of my friends here," Professor Markleson retorted, hotly, "I'd kill the lot of you with a single twitch of my fingers!"

The pistol in his back tensed again.

"Try it!" the raider invited.

A Foolhardy Move

BUT Professor Markleson had no desire to kill his friends and himself by throwing the huge *Sky Urchin* at the mercy of the earth's gravitational attraction. Had he felt inclined to do that, the tremendous weight of the ship would have carried it to the surface below like a plunging meteor, to crash

in a hopeless mess.

"But you can't understand the controlling order of this ship!" Professor Markleson argued. "How did you get aboard?"

"Don't mislead yourself into thinking that we can't operate this craft, my dear professor!" The man replied. "We've studied every inch of her in your own hangar! Getting aboard was as easy as getting into the hangar, despite your commendable precautions. There's nothing difficult in replacing the guards!"

"Then why didn't you take the ship off yourself?" the scientist asked incredulously. The other laughed.

"We are just as cautious as you were, professor!" he replied. "I calculated that it would be easier to take her in the air and perhaps, a little more interesting from the standpoint of adventure!"

"Do you realize where this little—adventure will lead you?"

"Why, of course!" admitted the skywayman. "To gold, riches, power and perhaps a kingdom of my own!"

The scientist stiffened, but continued to argue nevertheless.

"You are wrong, my friend!" he growled. "It will lead you to the gallows! And I'll be the one to see that you *do* hang! If necessary, I shall devote the rest of my life to apprehending you! I will hound you to the death!"

"Then I'm afraid you won't live as long as you hope to!" the raider snorted. "But I'll give you a square chance to forget about the *Sky Urchin!* I have the plans—I have the ship; so fear of being apprehended does not enter my mind. It is certain that you cannot duplicate this hulk in a hurry!"

"Perhaps not!" Professor Markleson sneered. "But I'll get you eventually and I'll live to see you swing!"

Professor Markleson brought the huge *Sky Urchin* down on the flat terrain as gently as if it were a feather. The ground was waist high in golden grain that shimmered like a sea of yellow under soft evening breezes.

The raiders, ten in all, headed by a heavy set man of Dr. Jorgstedt's proportions, dressed in black, close-fitting flight garments, his face hidden behind a black mask, herded the *Sky Urchin's* passengers to the single exit and forced them to step out. Professor Markleson was the last to go. He walked steadily in front of the leader himself, still feeling the blunt muzzle of the automatic in his ribs. He had had an excellent opportunity to study the man, absorbing each detail as he saw it. There was the gray point of the Van Dyke protruding from underneath his mask, yet the scientist could not entirely convince himself that he had faced his friend, Dr. Jorgstedt. If indeed it was he, the famous astronomer's mind must suddenly have gone berserk from the strain of his profession. It seemed almost unthinkable, however, that his old friend could have been so completely transformed into a daring, master crook!

As they neared the exit he made a sudden lunge at the masked raider. Foolhardy, of course, in the face of almost instant death from the ever-ready automatic! He swung around with an unexpectedness that nearly upset the raider. His arm thumped the gun hand of the man and sent it upward. With a quick flick of his hand he tried to pull the mask from his face. Then a thunderous crash roared in his ears. A bandit had moved beside his chief and brought the barrel of an automatic down with terrific force on the hatless skull of the scientist. He sank to the floor without a sound.

The Brink of Oblivion

WHAT transpired next is hardly worthy of account. It might be said that the passengers were so confused and bewildered that they scarcely knew what to do under the circumstances. They formed a knot around the limp form of Professor Markleson as the *Sky Urchin's* doors closed and it dropped away from the earth at a terrific velocity. His head was bathed in his own blood, his features unrecognizable, yet he breathed after a fashion. A piece of white paper fluttered from his hands as they began to rub them. A government man picked it up, glanced over a heavy scrawled message and swore. He read it again and again as though unable to grasp its ominous significance. There was no doubt that it had been inserted in the clutching fingers of the scientist by the raider leader himself. Calling to his companions, the official read the message aloud:

NOTICE!

I, the Sky Ruler, hereby claim the air as my own domain. Until now the air has belonged to no man and no law has been established to proclaim it a possession of any nation. I therefore claim it as my own dominion, and am prepared to defend it at all costs!

(signed) *The Sky Ruler.*

Within three hours the great presses of the world were rolling off newspaper extras by the millions. Wires hummed with the news of the daring coup of this desperate unknown man who had set himself up as the ruler of the blue, and the excited world sat back fearfully and speculated upon the outcome.

While the world read the sensational newspaper accounts given to it by the *Sky Urchin's* erstwhile passengers, and talked over the possibility of an aerial dominion, a corps of the nation's best physicians were struggling to save Professor Markleson, who was suffering with a fractured skull. He lay in a hospital in Kansas City, where his life hung in the balance for days. Physicians and nurses worked over him feverishly, well knowing the importance of this man in the world of science. His advanced age was against him, but some great reserve of strength seemed to carry him through, while surgeons removed the fragments of splintered bone that were making pressure upon his brain.

Meanwhile the *Sky Urchin* had vanished into thin air. Not a trace of it had been discovered. As though the great monster of the upper reaches had flown far out into the vast emptiness of space that is the universe, it disappeared. Powerful telescopes scrutinized the heavens, the aerial police ceaselessly searched the air—all without success.

FOR many days Professor Markleson hovered on the verge of death. And during all this time the whereabouts of the *Sky Urchin* remained a mystery. Whether it had fallen under control of unknowing hands in some isolated place on the far-flung fringes of civilization the world had no way of determining. Then suddenly, out of a clear sky, the silvered monster appeared over Washington at an altitude that made her completely inaccessible to man and his air-screwed craft. Huge flocks of government planes took off at once, only to return to earth, their screws useless in the rarefied air of the higher levels, their pilots exhausted and numbed from cold and lack of oxygen.

The great ship hung in the higher reaches like a bar of glistening platinum. From the ground it appeared no larger than a full-sized cigar, yet it seemed a thing of ominous intent. Even the president stood upon the White House balcony and gazed at it through powerful glasses, wondering what manner of man it was who had proclaimed himself the Sky Ruler. He was soon, however, to learn something about the man's intentions if not of the man himself. For even as he watched he saw a tiny missile suddenly detach itself from the huge aircraft. It came hurtling earthward like a bomb, in a straight line. Before the president could realize what was happening, the missile hit scarcely a hundred yards away in the center of the park across the avenue.

When it failed to explode a half dozen army officers raced to it and tugged it out of the ground. It was an aerial bomb, and no mistake, but a hollow dud. They at once unscrewed the nose cap, taking their lives in their hands in doing so. From the open end came a neatly rolled paper. Without opening the silken

cord that was wound around it, they returned at once to the White House. The President vanished from the gallery to hold council with the Secretary of War and other department executives. The army officers delivered the paper at once and stood away at attention. The Secretary of War opened it and handed it over to the President. The Chief Executive's face reddened as he read to himself a bold, daring message that the Sky Ruler had sent to him. Then handing the parchment to his secretary he settled back while it was read aloud.

To the President of the United States:
You have just become aware of the accuracy of my high-explosive missiles. Luckily for the White House, I have no quarrel with the United States—as yet. I can stand away at an altitude of 100 miles and blow every city in your country to dust. Do you realize that, Mr. President? But I do not desire war with any nation. What I demand is that my domain which is the skies—the last frontier—be free from air vessels of nations that do not pay a fixed monthly toll that will be assessed to each government. Five million dollars per month is to be paid by the United States. To send your tolls proceed as follows: Use one of the large navy blimps. Place the money in the basket with your list of craft. Release the blimp above the White House, and we shall intercept it. We shall hover over the capital city of each nation once each month for tolls. Pay-day for the United States will be on the second Wednesday of each month. Be ready to deliver one week from today. Unless the toll is paid, all craft flying through my dominion after that date will be destroyed at once!

(signed) *The Sky Ruler.*

Hardly had the excitement of the *Sky Urchin's* visit died down in Washington than the cables began to hum with news that the Sky Ruler had delivered the same ultimatum to the French Government. Hot on its heels came word to the American presses that Great Britain would be forced to suspend air travel until the demands were met. Then Germany sent news of its woes and finally Japan radioed the appearance of the silver hulk over Tokyo.

But the newspapers glared with heartening headlines declaring that the Sky Ruler could not be everywhere at the same time. American aircraft henceforth flew about their business at the lower altitudes as though the *Sky Urchin* had never existed. But one day a great air-liner limped into Lakehurst from Liverpool with her laterals virtually torn away. Her officers told a story of having met the *Sky Urchin* in mid-air over the Azores and how, upon refusing to halt, her steering gear had been damaged by a bomb exploding near her tail. But strangely she had been allowed to proceed without further molestation. It had evidently been a warning—no more, no less! As a result, the skies became suddenly void of aircraft, and aerial transportation was suspended by the American government until further notice.

It seems strange that a single airship could so terrify the world! But when the super-powers of that ship are taken into consideration, the reason was apparent. The *Sky Urchin* could fly faster, higher and farther than any other aircraft in existence. And it did not require any futuristic weapons in enforcing its demands! A few well-placed bombs would turn the trick as well as any death ray that might come out of the brain of some imaginative science fiction writer.

When Japan refused to meet the demands of a half million dollars a month, several of its cities were laid in ruins. Before appearing over Washington again, the cunning ruler of the skies waited until the news of his approach had preceded him. In consequence the government delivered exactly five million dollars in gold to the *Sky Urchin*. The navy blimp was then ballasted and sent down to earth with a note of thanks. Only then was aerial transportation resumed again with renewed vigor as though to make up for the loss.

CHAPTER IV

A Hopeless Battle

ALL this had transpired while Professor Markleson lay on a white bed tucked away in isolation in a Kansas City hospital. A silver plate had been inserted in his skull to take the place of the portion of bone that was removed. Government authorities were watching his case with undiminished interest, for in that brain which was now protected under an artificial plate lay a secret which they would give much to learn. Sooner or later the people of the United States would rebel against the monthly tribute that must be paid. Its only hope of release from the obligation lay in the building of aircraft capable of competing with the *Sky Urchin*. And such craft could not be obtained unless they sprang from the brain of the bedridden scientist!

The government had interviewed each and every man who had worked on the construction of the *Sky Urchin* with Professor Markleson, but none possessed knowledge of the ship's intricate details. Even the superintendent who had supervised the work in the absence of the scientist-inventor, could offer no help. Although he remembered certain things, he stated that Professor Markleson alone could solve the problem.

Slowly Professor Markleson began to mend. His returning health was guarded constantly, and gradually he began to notice objects in his private room. Slowly but surely he came out of the coma that had held him in a death-like grip for weeks.

But now the world, anticipating his recovery, was destined to receive a tremendous shock. When Professor Markleson was finally able to be visited, it was found that his memory was entirely gone! Of the *Sky Urchin*, he knew nothing, and looked at me oddly when the ship was mentioned. To him the name was as meaningless as something spoken in an alien tongue. When he was addressed respectfully as Professor by government officials, he stared around the room blankly as though trying to discover an invisible personage. His was a hopeless case, and the officials left him with consternation plainly written on their downcast features.

Swiftly another monthly toll day approached the United States. Behind locked and guarded doors the President's Cabinet held consultation with the War Department. What transpired behind those locked-doors was not known until the toll day arrived. Then the government sent up to the waiting Sky Ruler a blimp that carried nothing but a small piece of white paper in a steel-bound chest. At the same time the air was alive with all types of air craft flying at low altitudes. Government ships remained on the ground within hangars, but their crews were spinning and singing with desire to have the retaining blocks removed from under the landing gear.

Whether the Sky Ruler suspected a trap when he read the contents on the strip of paper was not known. It told him plainly in good old Yankee parlance to "go to hell!" And it must have ruffled his pride, for the *Sky Urchin* was immediately seen to dive headlong toward the earth under the controlled forces of its gravity repellants and rockets. As though its pilots were in a hot rage, the ship plunged down into the lanes of air travel and began at once to rake all scurrying craft with explosives from some strange-looking gun batteries. Several huge lighter-than-air passenger liners plunged out of the air at once and spewed death and destruction on the ground below.

THEN suddenly the challenge was met as five hundred army pursuit planes were hauled out of their hangars and in perfect formation shot into the skies like birds of prey. Caught in the lower air levels, the *Sky Urchin* seemed helpless

against the sudden onslaught from below. One single anti-aircraft gun roared and a shell smashed high above the silvered hulk. Then the big gun silenced, fearful lest its missiles take harvest in the government planes.

Like a swarm of flies attacking an eagle, the army planes swung straight for the hovering hulk, machine guns spitting and rattling, but sending slugs that were wholly ineffectual against the thick metal of the *Sky Urchin's* hull. The Sky Ruler aimed his guns and raked the ranks of his attackers. Seven planes hurtled earthward in flames, but the fighting spirit of the American pilots kept the others in the hopeless fray.

Presently, as though tiring of sending the whirling planes down in flames, the *Sky Urchin* heeled and swung away from the earth in a graceful half-turn that would have torn to shreds any air-liner less rigid. The buzzing planes continued after her but were outdistanced almost at once. Ten miles up the huge monster hovered and dropped a missile into a Washington square. The United States was given one more chance to meet the obligation. Without waiting for a reply, yellow flames shot from the stern of the *Sky Urchin*, and under the pressure of its driving exhausts it shot across the skies like a comet, vanishing in the distance.

Around the world went the *Sky Urchin*, visiting every nation of any importance on the globe. From what was cabled, the United States learned that every nation had met the demands without a single attempt to destroy the daring ruler of the skies. A Sky Ruler he was indeed! For one man and one great ship to be able to stand off and dictate to the world was beyond a doubt the most daring piece of piracy civilization had ever known. Word leaked to America from Russia that the ship had landed there to take on supplies, as it had on two occasions landed at the Dunmar Chemical Works in New Jersey to take on fuel. The raiders had even gone so far as to order the factory to prepare a great store of fuel, and had paid for it in advance. Company officials refused to disclose where it was to be delivered, fearing that the leakage would be detected and the entire plant blown to destruction by the Sky Ruler for revenge.

A Sudden Recognition

SUCH was the state of affairs when one day a serious-faced young man walked up the spotless white steps in front of the Capitol and demanded an interview with the Secretary of War. For more than an hour he waited until finally his impatience was getting the best of him and he got up and renewed his demands, stating that his mission was one of great importance to the world, and that if the Secretary did not wish to see him, he would at once set sail for England. Needless to say that he was admitted at once, and that he stared at the official with open contempt when he beheld him sitting in an easy chair in his sanctum nochalantly smoking an aromatic cigar, as though his mind was free from the trying cares of the nation's affairs.

"I am Jack Reeves, who acted as superintendent for Professor Markleson during the construction of the *Sky Urchin*, sir!" he introduced himself with little formality. "I dislike to interrupt your little afternoon *siesta*, but I thought the United States might be interested in a little invention I have perfected."

"Well . . . !" the Secretary boomed, appraising him suspiciously.

"As I said, I was superintendent to Professor Markleson during the construction of the *Sky Urchin!*" the young man replied, unshaken by the severity of the other's voice. "So I am pretty well acquainted with the ship which is now creating so much anxiety in all parts of the world, though, as you are probably aware, I am not so familiar with the craft as to be able to outline all its internal details. I have been an understudy of Professor Markleson for five years at the American Institute of Physics, and for a long time I have studied the plausibility of a magnetic ray by which to attract aircraft to earth."

"What has that got to with the *"Sky Urchin!"* the Secretary asked, laying his cigar aside and peering into the young man's face quizzically.

"Just this, your honor," Jack Reeves replied, meeting his stare on equal terms. "I believe I've perfected a magnetic ray of such power as that I can force the *Sky Urchin* to earth under the influence of its attraction!"

* * * *

While young Jack Reeves, calm and confident, was interviewing the Secretary of War, a pathetic drama in the lives of two of the world's most brilliant men was being enacted in the lounge of the Scientists' club.

For a week every known effort had been resorted to in order to effect a return of memory in the brain of Professor Markleson. Many old acquaintances were brought before him, but while his eyes would seem to brighten occasionally at sight of some friend, recognition refused to assert itself in his stunned, deadened mind. Friends had beguiled him to visit his old haunts in the hope that the sight of these would restore his memory. On this particular day he had been taken to the lounging room of the Scientists' Club, where for hours he sat in a big loose chair, while doctors stood about hoping he would recognize the appointments in the room with which he had once been very familiar. He stared curiously at familiar faces, but for the life of him he could not recall ever having known a single one of them. There was not a man in that room who was not appraised by the blank eyes of the famous scientist, and many of those present could boast of knowing him intimately.

Presently another familiar face and figure came into the lounge from the wide hall beyond. He too came under the appraising eyes of Professor Markleson. There was something familiar about the gray, pointed Van Dyke as worn by Dr. Jorgstedt! Yes, Professor Markleson felt deep within his soul that he had seen that beard and those deep set features before.—He covered his aching eyes with a trembling hand and then looked again at the man approaching him. With eyes upon the gray, pointed tip of that Van Dyke, nerves tensed to the snapping point, his brain whirling with a maelstrom of faces, objects and events, the scientist suddenly seemed to grow rigid—then leapt from his chair with a blood-curdling yell!

Roaring with the cry of a blood-thirsty beast, Professor Markleson lunged forward. Despite his weakened condition and taxed strength, he dashed across the lounge with astounding swiftness and with a half dozen bounds his once powerful fingers clutched the throat under the gray Van Dyke!

TAKEN unawares in the act of greeting his old friend, Dr. Jorgstedt seemed stunned by this unexpected outburst of hostility on the part of the famous physicist. Before he had a chance to defend himself from the other's savage rush, cruel fingers were biting into his jugular vein, cutting off his wind and throttling him mercilessly. He went down at once under the superior weight of the scientist, whose weakened legs tried vainly to hold him while his hands began to choke the life from the astronomer's body.

Friends galvanized into action after a moment of astonishment and pulled them apart. Professor Markleson struggled to break loose and get at the astronomer once again, but he was held tightly. He vented his rage in stinging epithets. Dr. Jorgstedt shook himself free and stared at his former friend in open-mouthed astonishment.

"You might at least have shaven off your filthy whiskers, Doctor Jorgstedt!" Professor Markleson raged. "I recognized you and you know it! Let me loose, my friends! My fingers itch to tear open his dirty throat!"

Doctor Jorgstedt stared in amazement around the circle of

faces that regarded him inquiringly. He was suddenly bewildered at the strange, hostile attitude of Professor Markleson, and was plainly alarmed. A man near him spoke softly.

"As you know, Professor Markleson has been under extreme physical difficulties, doctor," he said, "and is not accountable for his actions. He is probably laboring under an illusion and does not recognize you."

"That's a lie!" the physicist shouted, struggling to release himself. "He is Doctor Jorgstedt! I recognize everything now! You, my good friend, are Professor Brandon! I can name every one of you now! My memory was restored by a sight of the filthy features before me! Doctor Jorgstedt, you are responsible for hideous treachery! For the sake of our long-standing friendship, I swore not to disclose your degeneracy! But I will change that sworn oath here and now! I will maintain the secret on one condition and that is—that the *Sky Urchin* be returned to me within forty-eight hours!"

"But, my dear professor!" replied Jorgstedt in the most complete bewilderment, "I don't know a thing in the world about the *Sky Urchin* other than what has appeared in the newspapers! I don't know what you're talking about, though quite plainly you accuse me of something in which I must deny all guilt. On the day before the scheduled take-off of the *Sky Urchin*, I was instructed by the Astronomical Society to investigate a meteorite which had fallen in Southern Texas. Until my return this very morning I have been there continuously. I left here in such haste that I could not accompany you on the ship's maiden flight. Hence my failure to be on hand for such a glorious event. You simply have confused me with somebody else! I can prove in short order the length of my stay in Texas. Understanding the terrible experiences you have gone through, dear Professor Markleson, all I can say is that I am sorry from my heart and that I will overlook this great personal injustice you have just forced upon me, who have been your dearest friend since boyhood!"

Professor Markleson shook himself loose from the arms that had held him and stood free, glaring into the troubled countenance of the astronomer. He noted that Jorgstedt's face had taken on a heavy coat of tan that had not been there before. Nor could such a nut-brown color be obtained within the confines of the *Sky Urchin* unless he had stood in the sun light on the control bridge exposed to the violet rays that beat down through the transparent observation bands. Even then many weeks of constant exposure could hardly create such a deep tone. As the scientist's mind clearly considered all this, he felt puzzled and downcast, as though his mind had been playing him tricks. Did he really, now, remember the Van Dyke beard?

"Do you mean to say you were not on the *Sky Urchin* at any time, Dr. Jorgstedt?" he asked, his eyes suddenly becoming moist and glassy. *"Are you certain of it?"*

"Perfectly certain, my friend!" he replied, meeting his eyes squarely. "Beyond seeing her pictures in the newspapers I have never set eyes on the *Sky Urchin!*"

"Then will you accept my sincerest, my profoundest, apology for my actions, my dear friend?" said Markleson earnestly, striding forward with hand outstretched. "I will try to make amends by explaining a case of mistaken identity."

"I concluded that your actions resulted from something like that," Jorgstedt replied, grasping the hand of his friend in a warm, affectionate clasp. "The other party must certainly have been a ringer for me!"

"From what I could see of him he was!" the physicist replied, taking the astronomer by the arm and leading him to a far corner where they sat down out of earshot of the others.

FOR a long time they sat in earnest, friendly conversation. What was being said between them no one in the room seemed to hear, nor to care about, for that matter. All were too much engaged in discussing their own affairs to eavesdrop on others. Professor Markleson explained himself thoroughly, omitting not a single detail of his experience. He illustrated the close similarity between the famous astronomer and the Sky Ruler himself, although he had only seen enough of the latter's beard to arouse his suspicions. He conceded presently that that alone was insufficient for his resulting conclusions. But in addition the voice had sounded amazingly like the doctor's!

"Then the Sky Ruler still remains a mystery!" said Dr. Jorgstedt, by way of closing the unpleasant incident of the recent past. "What a wonderful ship he must have stolen!"

"Still a mystery, Doctor!" the physicist said, suddenly tired and weary. "The *Sky Urchin* is a wonderful ship indeed! I doubt if I could ever build another, because of one complicated mechanical system. The thief took the plans—the ship—everything! It must be recaptured without damage to protect the plans, which are doubtlessly on board. If by any chance they have been disposed of to a foreign power—and I don't think they have been—then we must have the ship itself so that we can build more like her. She is immune to present methods of attack, though I know that I could devise a means to destroy her. But we must have her intact!"

"Do you suppose that this Sky Ruler is by any possibility one of the men you had working for you on the ship's construction?" Dr. Jorgstedt asked.

Professor Markleson shook his head.

"My men were all students from the American Institute of Physics," he replied. "Not one of them had a chance to grow a Van Dyke. Of course that might have been a disguise, but I doubt if any of our boys had ever thought of such a daring scheme as the Sky Ruler has pulled. No, Doctor, I don't believe so!"

"Have you any other suspicions?" the astronomer queried.

The scientist regarded him with curiosity. Somehow he did not seem satisfied with the sincerity of that last question. It appeared to have been asked guardedly as though trying to feel him out for all he could give. His eyes narrowed as he beheld a slight, unnatural tremble in his friend's hands.

"No, my friend," the physicist replied, trying to speak casually, but watching the other's face intently. "I have no other suspicions!"

The astronomer smiled oddly, his lips drawn tight across firm, white teeth. The scientist's turned his head to regard a group of men standing nearby. He could have sworn that he felt again a pair of boring eyes penetrating his back. Turning quickly he discovered that Dr. Jorgstedt had been studying him intently. The latter's face reddened above his tan and he smiled curiously.

"Well, Professor," he said, rising and flexing his arms. "I'm mighty tired and I must make a report to the Society. Guess I'll run along. Meanwhile, take good care of yourself and forget the events of the evening. Good day, my friend!"

Professor Markleson's eyes followed him a little suspiciously as he strode swiftly across the floor and vanished beyond the curve in the hall. There was, he decided, a mighty close similarity between that figure and the athletic frame of the Sky Ruler! He slapped a knee and swore at his suspicions. He squared his shoulders; then, feeling the sudden effects of the strenuous events that had made his mind normal again, he got up and went out.

CHAPTER V

Markleson Returns

ON the *Sky Urchin*, the self-asserted Ruler of the Heavens lolled lazily in the big, spacious chair in the rear cabin lighted through the transparent bank, and casually studied a sheaf of plans. The huge silver hulk was cruising across the higher reaches at moderate speed. Far below lay the earth which at the *Sky Urchin's* great altitude appeared like a tremendous ball glowing slightly under the effects of a

midday sun. And from the earth the ship was invisible to the naked eye. Only through powerful telescopes could it have been brought close enough for observation.

The Sky Ruler puffed nonchalantly on a cigar, frequently stroking his pointed, gray Van Dyke with a slightly trembling hand as he regarded the plans. Sheet after sheet came under his peculiar boring eyes, as if he was filing each single detail of the *Sky Urchin's* structure in the pigeon holes of his brain. Whether he contemplated building other ships of the type through the enormous funds at his command was hard to decide, because his features were deep set and unfathomable.

Presently a small, hook-nosed man appeared at the door leading from the ship's promenade companionway to the rear observation cabin. He was dressed in khaki breeches, blue shirt and officers' boots. On his head was an aviator's helmet. His eyes seemed heavy with sleep.

"I'm going on duty at the controls now, Chief," he said in a piping voice. "What course shall we set?"

The Sky Ruler glanced up from the plans and nodded.

"How would you like to land her on Old Pock-face, Slattery?" he asked, drawing at his cigar and throwing a booted leg over the arm of his chair.

"The moon?" Slattery queried with an expression of alarm.

"Precisely!" the Sky Ruler replied, a humorous smile playing about the sides of his mouth.

"Wouldn't be very keen on it, Chief!" he replied, his face paling. "I don't reckon the others would want to risk such a flight even in this hulk. Of course if you say the word—"

"Naw, not yet, Slattery!" the self-styled air ruler chuckled. "I was just feeling you out. But we might take a shot at the moon one of these days. I've always wanted to explore it! Seems to have a powerful influence over me. Let's see! This is Sunday! Better set a straight course for Berlin, Slattery. Tomorrow's pay-day for the Germans!"

"Okay, Chief!" the pilot replied, relieved. "In a hurry?"

"Not much!" the Sky Ruler replied, turning again to his plans. "Take it easy!"

Slattery turned on his heel and swung through the companionway toward the nose of the ship, where he relieved the pilot on duty and took hold of the controls. He changed the *Sky Urchin's* course slightly to the north-east and then sat down in a comfortable wicker chair at the controls.

But while the Sky Ruler was taking life serenely as though he had not a care in the world, activity was feverish in the laboratories of the American Institute of Physics in Washington. A half dozen senior students of the Institute, headed by young Jack Reeves, were assembling the various sections of some strange piece of mechanism that was rapidly taking definite shape in a flat railroad car that had been tracked into the huge laboratory of physics.

PERSPIRING, with hands grimy and face soiled, the eager young men worked side by side, silently placing various sections of the apparatus in final shape for a general assemblage. Jack Reeves, as greasy as his subordinates, struggled with a medium-sized steel drum that appeared to have been shorn from a sphere of metal. Inside this device he was inserting great spools of copper wire He looked up at the touch of a hand on his shoulder. He had been so interested in his work that he had failed to hear the sound of scraping feet behind him. As he beheld the features that met him squarely, his grimy face lit up with instant joy.

"Professor Markleson!" he cried, shoving a soiled palm forward. The hand was taken despite its grime. "God! I'm glad to see you, sir! How are you, Professor?"

The scientist's features beamed as he wrung the hand of this young understudy. He seemed eager and refreshed, and his eyes flashed as keen as a youngster's.

"I'm all right, son!" he replied, glancing around. "Feel fine! But what's all this paraphernalia? Still working out your magnetic ray hypothesis, Jack?"

The young scientist grinned sheepishly.

"Not working it out, Professor," he said, grimly. "Just finishing it up! I've just about perfected it!"

"You have?" the Professor was pleasantly amazed. "Going to kill airplane engines in mid-air, eh?"

"Of course you could not have learned the real reason for building this outfit now, sir!" Jack replied warmly. "We are not going to waste any time experimenting with airplane motors. This device is especially designed to attract metallic bodies from the air!"

Professor Markleson regarded him through brightening eyes. His lips suddenly began to tremble as though he had just realized the importance that certain metallic bodies had been playing in the scheme of things in the heavens. He grasped the significance of the young man's words at once. He placed both hands on Jack's shoulders and shook him gently.

"Do you mean, son," he said, peering into the other's eyes. "That your magnetic ray as outlined to me before is a success? Have you actually perfected it?"

"You know I've been trying to work out a magnetic ray for a long time that would attract metal at a distance, sir!" the young physicist replied. "I figured to be able someday to pull aircraft to earth with dead engines firmly attached to the tip of a magnetic beam—invisible, of course!"

"Hm!" said Markleson, "just what is your idea?"

"What I do," began Reeves eagerly, " is to ionize the air by bombarding it with electrons from my projector. What I do in short is to establish a new attractive force for a body so that it is pulled to my projector, just as it is ordinarily pulled toward the center of the earth.

"Hm! Pretty deep," Markleson commented. "I don't get it offhand, but the important thing is that you've succeeded!"

"Yes, to a large extent, sir," the grimy young scientist replied. "But I don't seem to be able to keep the ray from spreading out in fan shape after it leaves the projection tubes, and I'm not exactly satisfied with its range. I have brought down a small captive balloon with metal attached to it, from a 5000-foot altitude. I'm not certain how far this larger device will project the ray. My model operated all right."

"That's wonderful, Jack!" said the scientist enthusiastically. "Is there anything I can do to help you?"

Jack Reeves studied the scientist's features for a long minute, his eyes flashing.

"Do you mean it—that you are able to work, sir?" he asked.

"Able?" the Professor snorted. "I'm as fit as a stack of fiddles!"

"Then you'll find your overalls, laundered and ready for you in your locker, sir!" the young man replied. "You understand my ideas thoroughly. I shall step aside and allow you full charge from now on!"

The Magnetic Ray

DONNING overalls, the scientist appraised the flat car. Upon it a strong tower of well insulated metal rose like a narrow pyramid toward the domed roof of the laboratory. The base was attached to the heavy car with insulated studs, bolted down tight. That the tower was complete and ready to accommodate the remainder of the apparatus he could see at once. Jack Reeves stood by his side, watching him with pride.

"That's the combined anchoring and broadcast tower, sir!" he said. "The device on which I was working when you came in fits on a gyroscopic principle on top of the tower, so that it can be swung in any direction except downward. Down here will be mounted the controls—the rheostat controls which will regulate the magnetic current as it enters the projection tube attached to the gyroscopic drum. I have also developed in the rheostat a method for regulating the range of the invisible beam. On my model the controls governed the ray

up to 5000 feet and the projector practically "sucked" the beam back into the projection tube with results that I brought the balloon down to earth. I can hardly believe it myself, it's so marvelous. There was a terrific wind when I caught it, but it could not pull loose from the magnetic influence in which the beam held it captive. The full-sized Magnetic Ray Projector is being built to project a beam capable of attracting even the *Sky Urchin* to it."

"The *Sky Urchin!*" the Professor regarded him quizzically. "You couldn't touch the *Sky Urchin* with a magnetic ray, Jack! The ship is insulated against magnetic or gravitational attraction, son!"

"Yes, it is," the young scientist conceded, "but you seem to forget, sir, that only the central section is placed under the electromagnetic repulsion influence for stabilizing purposes. That leaves both ends of the *Sky Urchin* open for attraction because they are operated from the center section by insulating quartz bands. My invisible magnetic beam ."

"Pardon my interruption, Jack!" said the scientist, his features stern and severe. "Have you taken this matter up with the government?"

"I have, sir," he answered. "The Secretary of War has appropriated $100,000 for the construction of this device. It has already been patented and my model is safe in the archives of the patent office. Considering your past experience in having your plans and ship stolen, I took ample steps to protect my invention before such a thing could happen to me!"

"I congratulate you, son!" the Professor said, patting him on the back affectionately. His eyes assumed a strange light, one that had existed in them when he told the Sky Ruler on that eventful day in emphatic terms that he would spend the rest of his days hounding him until he was hanged! And seeing only the *Sky Urchin* held captive to the tip of an invisible magnetic ray, he set to work with a vigor that his life had never before experienced.

BUT young Jack Reeves had been so thorough in his research that very few changes were required to make the ray an effective weapon indeed. He and the scientist worked tirelessly side by side at the bench on the more intricate details of the Magnetic Ray Projector while the senior students prepared the rest. During the five years he had spent as Professor Markleson's understudy, Jack Reeves had become very proficient. He had been given many opportunities to work out his own theories at the personal expense of the generous, kind-hearted scientist. And as for Markleson—when he got into the details of his ray device, his heart sang with boundless praise for this young man who, realizing the desperate straits in which the world had found itself since the *Sky Urchin* was stolen, had begun to apply his genius to its apprehension. The scientist knew at once when he looked at the plans that here indeed was an instrument as important to man as the *Sky Urchin* itself.

Here was an invention that would be invaluable to any nation—one that could be utilized nation-wide in time of peace as well as war. Sky bandits could be brought to earth under the influence of this magnetic beam. Enemy aircraft could be magnetized from it and attracted down, helpless in the firm grip of magnetic force!

The days of the *Sky Urchin* and its cargo of daring crooks were numbered!

The ending of the Sky Ruler's tremendous power was not far off now! He had dared, alone, to make the entire world do his bidding! He dared to think that he was invincible in control of such a great air cruiser as the *Sky Urchin*, but he underestimated science by a long, long shot! Professor Markleson chuckled to himself as he worked, running those thoughts over and over in his mind. Yes, the Sky Ruler had built castles in the air, but at the pull of a magnetic ray these castles were soon to topple to earth!

CHAPTER VI

An Unbreakable Grip

THERE came a day when the sky was queerly void of aircraft. Nowhere in the heavens could there be seen a ship of any type. But that was not a strange occurrence now; it had happened several times during the past few months, especially when the day had arrived for the *Sky Urchin* to appear in the upper air levels, ready to rake the sky with its all too accurate machine guns and deadly bombs.

Once again toll day for the United States had arrived and this time the government was to choose between paying the Sky Ruler's demands or having the continent plunged into mourning. True, the government had plainly told the Sky Ruler to go to hell on his last visit and had gotten away with it. But now it was a case of either paying two months' toll, or having New York, Washington, and other big cities laid in ruins. The Sky Ruler had demanded exactly ten million dollars in gold, under a threat to drop a dozen high-explosive missiles right into the heart of Washington!

But what the Sky Ruler expected was one thing, and what he actually received was another! He had plunged the *Sky Urchin* across the heavens like a comet from the westward, its driving exhausts causing a five-mile-long tail of purple flame to sear the skies from its rear. Even at its great altitude the hiss of the craft's open exhausts was audible to those who watched it tensely from an isolated area on the outskirts of Washington. Over the Capitol buildings, ten miles up, the *Sky Urchin* halted, hovering as easily in the rarefied air as an ocean vessel anchored in the safety of its harbor.

As Professor Markleson watched his stolen airship through powerful binoculars, tensed almost to the snapping point with excitement and undying hatred, he observed that the huge monster of the skies lay aloft with scarcely a movement. He saw a tiny object detach itself from the belly of the glistening hulk and plunge earthward. He watched its downward descent until it vanished behind a screen of trees. Expecting momentarily to hear the crashing roar of high explosives, he sat in tense suspense, scarcely breathing. But no such explosion echoed to his ears. It was just another of the Sky Ruler's sensational messages, though how it read he could not know.

He manipulated the range gauge on the binoculars and brought the silvery hulk even closer. He thought he saw a movement on the control deck through the transparent forward hood. But he was not certain. Then another missile dropped suddenly from the great craft. With an increasing whistle it approached the earth, straight down. Was it another message, or had the Sky Ruler become enraged at the delay in sending up the blimp that was to deliver to him exactly ten million in gold bullion?

Hardly had Professor Markleson dropped a hand to signal to young Jack Reeves, who sat at the rheostat controls of the Magnetic Ray Projector, when the echo of a terrific explosion rent his ears. The roar stunned him for an instant as his hand dropped. The earth seemed to tremble under the thunderous concussion and he saw a mass of swirling debris and dust rising scarcely a mile away.

JACK REEVES, sitting at the controlling instruments nestling under the base of the projection tower on the flat car, bent over the apparatus instantly. His nimble fingers twisted a series of rheostat control dials, and the gyroscopic drum on top of the tower began to move in a slow rotating motion. He touched the gyrostat dial, and the drum, like a huge, round-backed searchlight, began to rotate on its jointed axis with an ominous whirring. Back and forth, up and over it swung, until suddenly it stood rigid with a jerk.

What Markleson saw through his binoculars caused him to let out an excited yell. At once he was surrounded by a group

of army officers who concentrated their attention upon the shining hulk far above. But Jack Reeves remained at his post, bent over the controlling apparatus which to a layman would have seemed nothing more than an ordinary box-radio, with its dials exposed to him.

The *Sky Urchin*, floating lazily in the higher reaches, appeared to snap its glistening nose slightly earthward with a jerk as if some visible hand had pulled it! Its tail shot up at a forty degree angle with a suddenness that astounded even Professor Markleson himself. The scientist, through his glass, concentrated his gaze upon the foreward insulation band. Through it he could see indistinguishable figures darting about in bewilderment. As though held captive by an invisible leash attached to a bull ring on the end of its pike-like snout, the *Sky Urchin* stood rigid with its nose on an angle, pointing directly at the drum atop the projection tower!

Invisible as it was, Professor Markleson knew that the magnetic ray had drawn the *Sky Urchin's* nose within its influence to be held in an unbreakable grip to the end of the beam! But somehow they had overlooked the possibility of the grip being broken by a sudden splurge of power from the ship's propulsion rockets.

From behind the *Sky Urchin* there came suddenly a terrific roar. A score of long, yellow jets of flame shot from its exhausts. With a recoil that threatened to rip it to pieces, the craft lurched earthward with a terrific force. Then with a startling abruptness that must have hurled its crew in all directions, its rapid descent was checked, while its tail began to swing around in great circles. Under the tremendous power that must have emanated from the exhausts, the *Sky Urchin* spun around, with its nose held like a captive fish, desperately seeking its freedom.

Professor Markleson let go his binoculars. They dangled at the end of a loop slung around his neck. He danced with glee and yelled like a madman. Even the army officers—veterans—all seemed elated; their faces were wreathed with smiles. But then something happened that was unforeseen by the victorious group around Markleson.

Caught Again!

WHEN the flat car bearing the Magnetic Ray Projector had left the American Institute laboratory, it had rolled over a hastily laid track in the center of which was a high-tension third-rail to supply the apparatus with the necessary voltage. There came suddenly a blinding flash of high potential electricity from underneath the flat car. Instantly the projection machine went out of commission. Then under full force of its driving exhausts the great *Sky Urchin* shot like a falling comet toward the earth. Stunned and foolish, the scientist and the officers stood still, too much awed to move as the glistening hulk bore down upon them. It roared through the heavens like some tremendous terrestrial monster, traveling on an angle that would carry it scarcely more than a few thousand feet above them.

With a disheartened groan Professor Markleson threw himself flat on the ground, in an effort to escape death by cremation from the blazing wake of the oncoming menace. With his face buried in his hands he lay there tense, as the hissing roar increased above him until he felt that the *Sky Urchin* could not be more than a mile away. He expected momentarily to feel the flame from its exhausts scorching his flesh to ashes. He pictured the end—the stark ruination of the Magnetic Ray Projector! His mind whirled with scenes of death and destruction. Then he cursed himself for a blithering idiot for not having jumped at once underneath the flat car to learn the cause of the disaster.

He shot a glance at the *Sky Urchin*. It had now flattened on even keel and was hurtling across the sky some 10,000 feet up, its exhausts driving it to full velocity as though the pilots were endeavoring to escape with their lives. Instantly he leapt up and made a dash for the car. Stooping low he literally hurled himself under it, bumping his shoulder on the platform. With a numbed hand he grasped a contact wire that hung loose and away from its shoe. Careful lest he touch bare copper or steel, he plunged the wire onto the rail amid a shower of crackling green sparks. At once he discovered that the wire had jumped from its socket in the shoe that traced the rail. Wasting valuable seconds he jammed the bare end of the cable into the socket, gave it an extra shove and rolled away from it. He sat up on the ground well away from the car and rubbed his smarting eyes. If he had ever faced death in all his life, he had certainly confronted it under the car. But he had no time to realize the fact. It was a humane act of Providence that he escaped without more than stinging eyes as the result of the high-tension flashes and spark showers!

Young Jack Reeves, sitting at the controls of his invention, cast a frightened glance at his benefactor. But he refused to quit his post. Aware that the current had once again thrown his magnetic beam into the air, he concentrated immediately upon the rheostats. Above him swung the drum in rapid, spasmodic rotation, projecting its invisible magnetic beam into the heavens, nervously searching like a searchlight for its objective. He twisted the rheostats with tense, bloodless fingers, increasing the range of the beam to near capacity. The *Sky Urchin* had vanished into the distant skies, yet not so far but that the beam, with the speed of light, caught up with it. The young scientist gave a yell when the projector stood suddenly rigid, facing the direction which the monster of the air had taken. He threw on full power at once and the apparatus hummed with a terrific throb.

HE touched a button switch that threw into action the retraction units. Glancing at the range dials he saw the indicator slowly pushing toward zero. He grasped a dial eagerly and increased the retraction until the indicator swung over its orbital course more rapidly. The drum-like projector, shooting its invisible magnetic ray, faced the east, rigid and taut. With a joyous shout he leapt down off the car and dashed to Professor Markleson's side. The scientist was dusting his clothing. In his eagerness Jack grabbed him brusquely and swung him around

"We've got her!" he yelled, pointing eastward. "We've got her where she can't break loose!"

Professor Markleson lifted his binoculars eastward. Sure enough, the *Sky Urchin* hung low in the distant heavens like a huge fish hooked by the tail to an invisible line! Slowly, very slowly, she was being drawn, tail first, back toward the projection tower!

He handed the glasses to his understudy. Reeves stared at the captive for a long minute and then returned them, his face drawn tight with excitement and anticipation. Held on the tip of the powerful beam, the *Sky Urchin* was being automatically returned!

"Better take a look at the cable on the third-rail shoe, son!" the scientist advised tensely. "I don't know how well I jammed it in! We don't want it to pull loose again. If it does, we're sunk!"

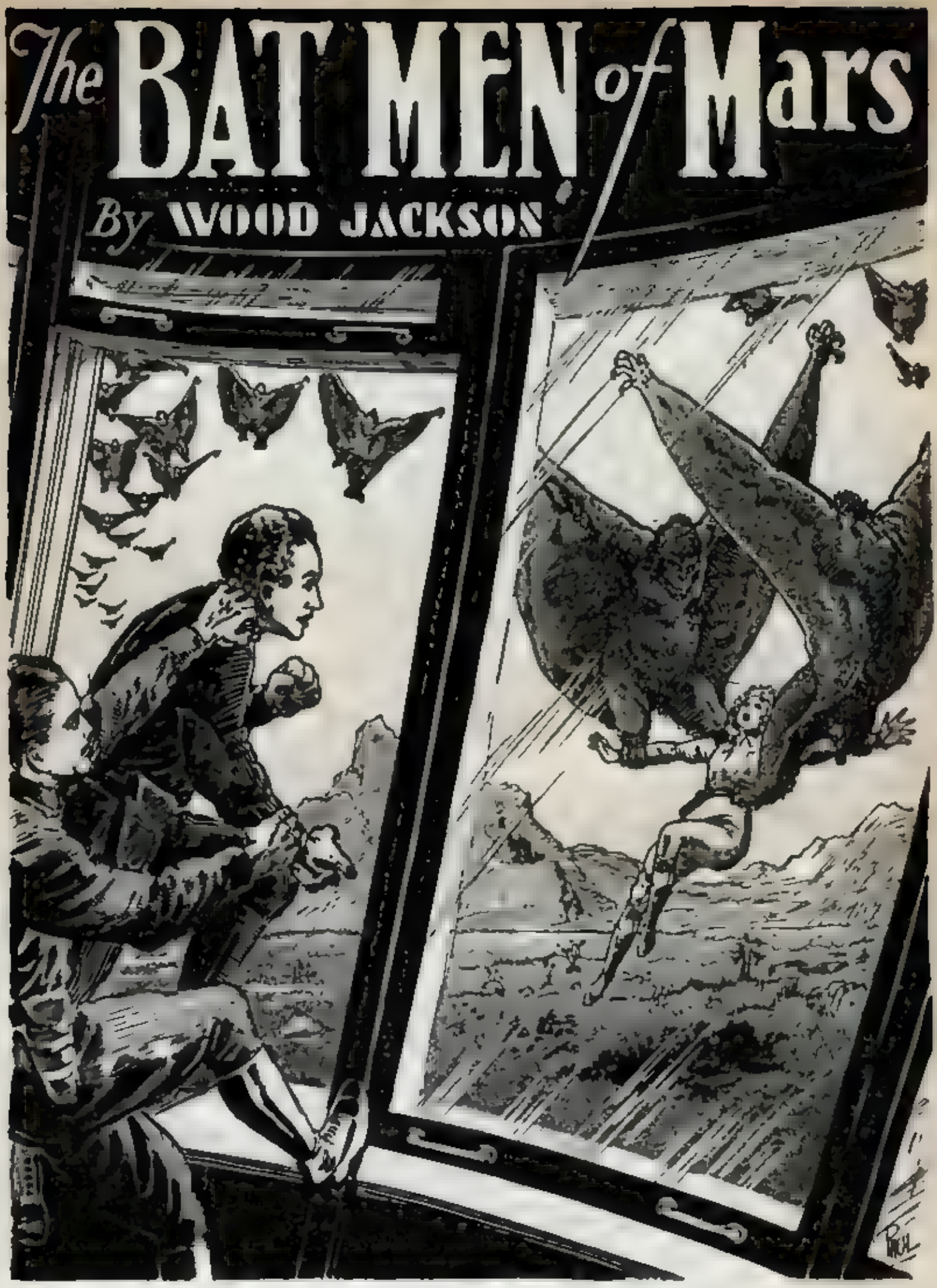
"I'll look at it, sir!" the young scientist replied. He crawled under the flat car at once, returned to a tool chest, picked out a hammer and again disappeared. There came the rythmic thuds of hammer blows. Professor Markleson looked again at the captive ship. She was much nearer now and no longer did yellow flame sear the sky. She seemed to have given up the fight, but the scientist felt that the desperate crew was not yet ready to lay down its arms and surrender. He smiled grimly as he watched Jack Reeves climb again to his post on the flat car. Brilliant young man, that Jack Reeves!—he said to himself. He turned to the officers.

"Lane your guns on the *Sky Urchin*, gentlemen," he said.

(*Continued on page* 1036)

The BAT MEN of Mars

By WOOD JACKSON



(*Illustration by Paul*)

The two men were horrified to see her snatched up from the ground by two strange flying creatures that suddenly descended on her. The girl's scream was drowned by a roar from above.

THE BAT-MEN OF MARS

THE year was 1958; the planet Mars was approaching its closest position to the Earth, and the two friends had completed their plans for the most daring adventure ever known to humanity. All the world had said they were lunatics to attempt it, but that had not in the least deterred them. Confident of success, they were determined to make the effort. The one was rich enough to make the venture possible, and the other was the outstanding genius of his time.

The Fry projectile, closely guarded in its hangar, was ready and waiting, fitted out and equipped in minute detail. Soon it was to start out on its journey. Leaving the realities of Earth behind, it would fare forth into the unknown on the first interplanetary voyage ever attempted by man.

Ten years before Leonard Fry and Henry Randolph had been classmates and inseparable companions and friends. A spirited discussion in those days had formed the basis of their present plans. Both had been deeply interested in scientific study—astronomy, natural philosophy and biology holding their deepest attention.

The secret of the universe had always fascinated them. So had the secret of life; but this was nothing new, since it had held men's attention for untold ages.

"What would happen," Fry had asked, "if all life on Earth were blotted from existence? Do you think it would come again?"

"Assuredly, if the same conditions prevailed," replied Randolph.

"In the same forms?"

"I believe it would."

"Then you think evolution is governed by rules and regulations."

"Exactly," agreed Randolph. "If similar conditions prevailed, nature could reasonably be expected to employ the same designs for which she had already shown preference."

"But I suspect," persisted Fry, "that nature is extremely whimsical. Perhaps that is not the best way to put it. Let us say that evolution follows the lines of least resistance."

"Then you mean—?"

"That in the process of evolution, that which once became a gigantic reptile might just as easily have become a bird or an insect. Or that if nature tried again she might endow with intellect a creature entirely different from man."

"I don't agree with you," said Randolph, in whom there was deeply grounded, in spite of the depth of his scientific study, the belief that there was a Supreme Intelligence. "For example," he went on, "I should be surprised if forms of life on other planets differed from what we find right here."

"It would be interesting," mused Fry, "if one could journey to other worlds and see what nature had done there."

Whereupon Randolph had laughed at his friend's serious manner.

"And that opportunity," Fry declared deliberately, "might actually come some time."

At that Randolph had roared, and had sworn he would be the first to embark on such a voyage if the way could be found.

"You'd go?"

"Absolutely."

"I wonder if you really would!"

"Just show me and I'm your man," Randolph had promised.

And now, with Dr. Leonard Fry's discovery making it apparently possible, he was ready to keep his word.

WOOD JACKSON

THOSE few terrestrials who are the fortunate or unfortunate ones to make the first interplanetary trip to the moon or the other planets, are certainly destined to have the most remarkable experiences ever encountered by men. They will have no real knowledge or certainty of the conditions they will meet once they set foot on the strange world; and the chances are just as bright that they will be immediately exterminated by some strange form of life as that they will encounter a friendly human civilisation.

But the chance that they take is no more than was taken by those other explorers whose names are engraved on our minds—Byrd, Peary and others. Certainly our interplanetary voyagers will go equipped with the best weapons of offense and defense that science can provide.

The present story appealed so to the editors because its pages rang with the tone of truth. Mr. Jackson's characters just seem to live, his adventures are not far-fetched and as one goes on through this story he begins to feel that he is really taking part in a stirring interplanetary drama.

Dr. Fry had astonished the world by releasing the power of the atom and applying its energy. He had already dispatched a rocket to the moon with atomic power, and had proved it to the satisfaction of other scientists. With the largest telescopes in America trained upon the lunar surface, he had landed his rocket, which at the moment of impact had released with a burst of atomic energy a dense cloud of orange-colored gas. Orange, the complement of blue, had been easily discernible through the blue of the Earth's dust-filled atmosphere.

BUT Dr. Fry had not revealed the secret of his discovery to anyone save Randolph. However, as he was not one to take too many chances, he had carefully written the formula of his discovery and left it in trust at his bank. It was to be given to the world in the event that he and Randolph did not return within five years.

The projectile had been built at enormous expense. The most skilled mechanics in the world had been employed on its construction, all sworn to secrecy. Then, when the great shell was finished, Dr. Fry had amazed humanity with its performance. It was flown around the Earth in five hours' elapsed time. Scientists and government representatives had been on board.

The world flight had been made at a slow speed, the projectile moving at no time faster than five thousand miles an hour and at an altitude of twenty miles to prevent heating from friction with the atmosphere. Observation had been possible with a powerful telescope that revealed flashes of the oceans and continents as the craft swept around the globe.

Dr. Fry explained that with the full blast of atomic energy loosed for propulsion the outer shell of the projectile would heat rapidly in the lower, denser strata of atmosphere. In fact the speed of five thousand miles an hour would closely approach that of meteors, which become heated to incandescence when they enter the Earth's atmosphere.

Provision had been made against such heating by employing liquid air for cooling the outer shell. Powerful compressors kept a narrow space between the outer and inner shells filled

with the liquid air. Automatic pressure escapes had been provided as well.

The projectile was a graceful, streamlined craft some three hundred feet in length. Cigar-shaped, it had a maximum beam and depth of thirty feet. The magnesium alloy of which it was constructed was the strongest yet lightest metal developed for aircraft building.

The craft had a series of rocket tubes for propulsion.* These were arranged in various sizes near the stern. They were operated in sets, the small ones for a cruising speed that could be regulated for a minimum of a few miles an hour, and the larger ones firing with great rapidity to provide the maximum of eleven hundred miles a minute.*

And now the long-awaited day had come. Tonight the two friends were to set out in an effort to reach Mars. Naturally, the announcement of their plans had caused a stir throughout the world. Scientists were not in agreement as to the outcome of the venture. Some believed Dr. Fry could take his craft through space on an interplanetary voyage and return to the Earth. Others doubted the possibilities of the projectile on such a stupendous undertaking. They sought to dissuade Dr. Fry, whom they regarded as the foremost scientist living and therefore a man too valuable to civilization to justify the taking of such chances.

But Fry was obdurate, and so was Randolph. They were determined to start on the great adventure of which they had dreamed for years.

Entering into the plans of the two men had been a computation in higher mathematics such as was practiced by the astronomers of the day. The projectile, moving at terrific speed, had first to be aimed with the greatest precision. Success depended on angular reckoning. Dr. Fry, as astronomer, physicist and mathematician, was second in this to no man alive. Repeatedly he had gone over his figures, and always his findings had been the same.

Both Fry and Randolph believed the chance for success was worth the risk and the effort. The projectile had been tried and tested. Its speed was definitely known. Fry knew it would escape the atmosphere of the Earth and overcome gravitational pull. And then, carefully aimed and headed straight for Mars, at maximum speed and under gyroscopic control, he believed it would continue without deviation from its course.

The hour for the departure had come. Streaks of flame illumined the night sky. They were off! The winking lights of St. Louis dimmed rapidly as the projectile rose swiftly to the upper air level, its rocket tubes emitting blasts that roared momentarily and then became hushed to a low drone.

With the delicate instruments he had perfected, Dr. Fry aimed the shell with the greatest precision at a definite point in the heavens. He knew that when he got to that place Mars would have moved there to meet them.

CHAPTER II

Rushing Through Space

AS the projectile rushed through space, the two men moved leisurely about, for there was nothing for them to do. The great shell of tough metal found no resistance here. It had cleared the atmosphere of the Earth with sufficient velocity to overcome gravitational pull, and they were speeding along now with the globe rapidly diminishing in size.

Absolute zero did not affect them. Dr. Fry called Randolph's attention to the thermometer. It stood at 72 degrees Fahrenheit inside the great shell. Outside, the scientist knew, it was absolute zero, a cold which is not exceeded in all the cosmic scheme.

Randolph looked up to find the eyes of his friend upon him. Neither showed the slightest concern. Unlike as two men could be, they yet had in common the dauntless spirit of adventure. They had realized, of course, that they dared oblivion. But what matter? It was the great adventure! Times had changed with the advancement of science, and they had risen equal to the occasion. They were men to dare oblivion, eager for the chance.

"Satisfied, Leonard?" asked Randolph, his tone indicating that he knew what the answer would be.

"Perfectly."

"And so am I."

Dr. Leonard Fry was a man a little above medium height and of compact, athletic build. Randolph, who knew him well, believed he had no nerves, no fear of anything in existence. The scientist's gray eyes were clear and steady as he looked into the void through which they were rushing. His high, wide forehead, from which his dark hair swept back, showed no lines of worry. His sensitive mouth reflected a smile of confidence, and his color was heightened by the thrill of the adventure he had dared. He reclined in an easy chair, apparently as comfortable as if he had sat in his apartment discussing plans with his friend.

Here, thought Randolph, was concentrated the ultimate of human force in this one man, who at thirty-five easily led the scientific world. Everything about him suggested power, mental resource, courage, daring, will. His confidence in himself, as Randolph knew, was so limitless that he might have been considered the foremost egotist alive, but his friend had long ago found denial of this in the fact that Leonard Fry had always succeeded. There lay the proof that he knew, and knew that he knew.

"You have no regrets, Randolph, old fellow?" Fry was turning the pages of a book. Randolph noted that his friend's graceful but powerful hands were as steady as a man's could be. There was no nervousness here.

"None," answered Randolph. "And if I had—" he merely waved his hand toward the projectile's stern to indicate his complete dismissal of what they had left behind them.

RANDOLPH was the younger by two years and a man of great size. Six feet four inches in height and weighing nearly two hundred and fifty pounds, he yet appeared slender, so symmetrical were his proportions and so graceful his carriage. He was a flaxen-haired, square-jawed, big-boned, elemental man, descendant of explorers, adventurers and pioneers through many generations. Behind him had been conquests of such importance that, long before Dr. Fry had discovered the secret of atomic power, he was regarded throughout America as a dominating force in business.

Henry Randolph was every inch a commander, a natural, born master of men and situations. In business he had occupied a place equal to that won by his friend in the scientific world. He was a practical and hard-headed man, but withal he was a dreamer and an adventurer too, a man in whom the extremes of fact and fancy met and were bound together.

Long since these two men had discovered and appreciated the strength of the appeal each made to the other. Their natures were, so to speak, synchronized, attuned with such a close approach to perfection that what one lacked the other supplied. They were not alike. Indeed they were strong in contrast in all except the quality of determination, each possessed in about

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* In addition, the projectile was provided with other sets of tubes vertically placed beneath the craft to give it the buoyancy desired. No lifting gas was required. And there were other sets of tubes through which atomic energy could be released, but these were for the projectile's protection against possible foes. This power was absolutely blasting in its destructive force, a disintegrating weapon more annihilating than any the world had ever seen.

The projectile was provided with ailerons, but these were for steering only in the atmosphere. Gyroscopic control had been provided to keep the shell on its course in empty space.

In addition, since the craft's interior was to be occupied, a third inner shell had been used as a lining. Powerful pumps maintained a vacuum between it and the shell that enclosed the liquid air. Thus insulation was provided to protect the cooling element against interior heating for warmth.

equal degree.

With escape now won from the Earth, the adventurers realized that a long wait lay ahead of them with almost nothing to do. The projectile would go on and on of its own motion for days and weeks through the thirty-five million miles that separated it from its objective.

There was no work of any kind to be done. The great shell was automatically controlled, and only a glance at the course indicators every few hours was necessary to make sure that they were on their chosen path.

The two men sat in the observatory enjoying the thrill of their adventure. Highly entertained, for they had been given a privilege no human beings before them had enjoyed, they were yet awed by what they beheld.

The sun, of course, was in eclipse, the great bulk of the Earth lying directly between them and the flaming orb. So there was no sleep for them, for they both wished to see the sunrise upon the Earth, which Fry knew would come soon.

Dr. Fry pointed out the planets to his friend. There was Mars to the right of the projectile, its steady glow holding their attention, as well it might, since it remained to be seen whether the planet was ever to be their destination. Meanwhile from every direction, as they plunged into space, there flamed the constellations. The heavens were literally studded with stars that glittered as diamonds set against a background of velvet black.

Then at last the adventurers were rewarded with the sunrise upon the Earth, from which they were hurtling at a velocity of more than one and one-half million miles a day. But what they saw was merely a flaming orb, the glare of a great star shining from a dead black sky. For here, there was no dust-filled atmosphere to create the illusion of blue and to obscure their vision.

Stars showed in every direction, undimmed by the glare from the sun. Outside of the projectile there was darkness. It was only inside the great shell where an atmosphere obtained that the rays of the sun were diffused into daylight. And hanging there in space, as the adventurers gazed back, was the world they had left, its seas reflecting the bright sunlight and its land contours showing ragged and irregular as faint, dark markings.

As the two men looked out into space and beheld the sun, they were protected from its glare by specially constructed windows. These were built of cylindrical filaments for strength against the interior pressure and colored according to the scientist's own carefully prepared formula.

"And out there, Randolph," said Fry, "it is absolute zero. If we opened the windows we'd soon be icicles in every tissue."

"I hope," said Randolph, "that the glass holds!"

'Well, rather," said the other, "but I am sure it will. There is no resistance at all from without and that from within is not strong enough to affect it."

OXYGEN tanks under terrific compression supplied them with air. Everything had been provided for their comfort and convenience. The projectile's interior was commodious, its quarters extensive. There were vast store-rooms where food supplies were carried. Also there were a gymnasium, a lounging-room and five sleeping chambers in addition to the large observatory near the stern.

Port-holes, now closed and securely fastened, could be opened from a lower deck. Here had been stored their weapons of defense, machine guns, light and heavy rifles and vast quantities of ammunition. There were also ports, now closed, into which two sets of heavy landing trucks had been drawn as the projectile left the Earth on its journey into space.

Forward was the power laboratory. It had been built into the shell with great care taken for its protection. It was placed on a *middle* deck and there were protecting walls on either side. But a system had been installed with which the craft could be operated from any part of the interior. Its propulsion, its steering when there was atmosphere, its defense tubes, everything in fact in the way of manipulation was ready at hand wherever Dr. Fry might be.

On, and on through space at terrific velocity sped the projectile. The two men inside it sat in contemplation of the glories all about them; but as time wore on and their watches showed the breakfast hour they thought of food.

Randolph made the coffee and broiled the bacon while Dr. Fry toasted the bread a rich golden brown. Eggs shirred in an electric oven and cream, fresh and sweet from a generous supply in the refrigerator room, whetted their already keen appetites.

As Fry buttered the toast and Randolph poured the coffee, both eagerly anticipating their first breakfast in space, there came to them distinctly, as though close at hand, a human voice.

"Gentlemen," it said, "have you some for me? I am nearly starved!"

Just an instant the two men looked at each other wondering if they had heard the same thing. Then they turned in the direction of the voice. There stood Alicia Rowan, Fry's fiancee, in the doorway of what they had believed to be an unoccupied sleeping compartment!

CHAPTER III

Adventurers Three

THE reaction of both men was as though a ghost had suddenly appeared! They were first startled and then dumbfounded, for they had believed themselves alone as they sped through space. They had taken precautions to prevent a coup of this kind from some ambitious journalist. The door of the hangar had been securely locked and that was how they found it. Besides, there were only two keys that would unlock it—as they had believed.

However, the vision of loveliness standing before them was proof enough that the girl in the flesh was in the great shell with them, bound like themselves for the unexplored realms of space.

In amazed silence the two men regarded the golden-haired, blue-eyed girl who stood there in the doorway, smiling bravely but somewhat doubtingly as her question remained unanswered.

"Do I look like a ghost?" she inquired laughingly, breaking the spell.

And now Fry spoke for the first time. "Alicia," he demanded, "how on earth did you manage it?"

He remembered she had begged him to take her, but he had not dreamed that she would attempt this.

"Leonard," she replied tremulously, although she smiled happily, "I simply couldn't let you go without me. After you told me good-by, I slipped out the back way where my car was waiting and I drove ahead of you to the hangar. There I let myself in with a duplicate key I have carried for weeks. I got a wax impression of your own key and here I am. Isn't it all perfectly thrilling?"

"So you stowed away, eh?" said Fry, wryly.

"Yes. I had meant to do it all along"

"But this may mean the end, Alicia," he warned.

"I know," she agreed, looking into his eyes, unafraid. "But if it is I shan't be down there waiting and longing for you."

The girl now sought to look deeper into her lover's eyes. A tender smile lit her face, but her expression was still one of uncertainty.

"Are you angry with me, Leonard?" she asked, simply.

"No, bless your heart, but I shall worry about you."

"Oh, please don't!"

"But there's no telling what we may encounter," said the man. "We are daring the unknown—another world—perhaps strange beings or terrible forces. Ahead lies mystery—we have left the real world behind!"

"I understand perfectly, Leonard," the girl admitted, "but there can be only one end for any of us. No terrors that come can harm me more than they can hurt you."

Randolph lightened the tension with a laugh.

"Anyway, Leonard," he said with finality, "the stowaway can't be put off or taken back. She seems to have everything her own way."

"Oh, absolutely," said Dr. Fry. "And now, Alicia, you confessed an appetite. Let's eat and drink and be merry, for tomorrow we may—"

"Leonard!" cried the girl. "For shame! This venture is to succeed. I simply won't have you fail!"

"But we are not supermen," he protested.

"You are," she insisted, "and the whole world knows it!"

"And that might not count up here," he retorted. "But tell me," he went on, "will you promise not to fall in love with some handsome Martian and let me go back without you?"

THE girl merely looked at him, the light of enduring love in her eyes, but a twisted little smile on her lips betrayed, he thought, her anticipation of a somewhat belated breakfast. This was verified the next moment as she seated herself at the table and eagerly took the cup of coffee he poured for her.

Breakfast over, Alicia told how she had carried out her plan to board the projectile. Her duplicate key had enabled her to make elaborate plans for the venture. She had made many secret trips to the hangar with her belongings. She had outfitted as completely as they had. Proudly she showed them the costumes she had brought. Outdoor apparel predominated, but there were pretty frocks, too.

"By jove!" exclaimed Randolph, teasingly. "Our pretty little stowaway is expecting to get into the Martian social register sure as shooting!"

A shadow passed over the scientist's face.

"I'm hoping that the Martian 400 will not try to annihilate us," he confessed.

Randolph looked up surprised. From the first he had trusted his friend to the uttermost limit of human powers. He had implicitly believed Dr. Fry could do anything

"But, Leonard, we are prepared for anything that happens," he argued.

"I think we are," said Fry, slowly. "But you must remember that the Martians might be a good deal older than we are, and have a higher civilization. It is possible that we are pygmies in power and skill and mind compared to them. That is to be considered."

"Even then," declared Alicia, bravely loyal, "I feel that you are superior to them, whatever they may be and whatever they may do."

Dr. Fry's countenance betrayed his misgivings, which existed only because of Alicia's presence on the projectile. There must be no turning back, he knew. That was impossible, for it would mean defeat. So, whatever the projectile's destination might be, there Alicia would be bound to accompany him and Randolph. Meanwhile he could but hope for her safety and do all in his power to protect her.

The girl sensed the anxiety that her lover did not voice, and she knew it was because of her. Passionately in love with him, as her presence in the projectile eloquently attested, she now sought to dispel any worry for which she had been responsible.

Apart from her natural beauty, Alicia's greatest charm was in her direct speech, which she made most engaging. She now aroused Randolph's admiration anew and diminished in a degree Fry's perplexity by the manner in which she sought to approach a better understanding of their situation.

"Now, Leonard," she began, "I want you to quit worrying about me. You must know it's far better as it is than if I were down there alone and you were going into the unknown, perhaps never to return. Oh, we live and love for such a little space of time, and I care too much for happiness to risk it all by staying on one world while you go adventuring to another!

"I confess that I loved you too deeply for that, Leonard," she went on, and Randolph listened in perfect sympathy, for here, he thought, was such a woman as is found but rarely. "So I came, oh, Leonard, how glad I am in every part of me!" she cried. "I should have been unwilling to miss any of it, the glory of the beautiful, wonderful, terrible sun, the thrill of the adventure and companionship with you—all these were lure enough, dear, and you can't blame me! Now won't you forgive me for what I did just because I loved you so?"

"Why, Alicia," responded her lover, as, moved to tenderness by her appeal, he embraced her endearingly, "you haven't a thing to worry about and you've nothing to fear so long as we have strength to defend you."

"But I don't mean that at all!" she declared. "I want you to feel that I am not going to be in the way, a hindrance, an encumbrance, but rather a help. This is your great and wonderful adventure, yours and his. I wouldn't have you fail for life itself. Now, won't you let me help?" she begged. "Won't you let me share your risks the same as your triumphs when you have succeeded?"

RANDOLPH was nodding and smiling his approval as she talked. But he said nothing, for, although she had included him in at least a part of her appeal, he knew it was a matter between them alone.

Presently Fry permitted the ghost of a smile to escape him. Then his eye brightened and his countenance cleared. Alicia was encouraged.

"And now promise you'll quit worrying about me!" she pleaded, turning her beautiful eyes full upon them.

"Oh, but *I* haven't been worrying," protested Randolph, smiling encouragement.

"And I shan't—any more, I promise you," declared Fry, warmly. "Why, I'm rather glad, really, that you're here, little girl!"

"Really, Leonard!" she cried.

"Yes, and henceforth we are adventurers three, and whatever comes we shall face it together. And you, I think," he praised, "are the bravest of us all." He kissed her tenderly.

The girl's face was now radiant. She had been accepted as a comrade and partner by the two most daring and picturesque men of her time on what, she made sure, was, up to the moment, life's greatest adventure and undertaking.

CHAPTER IV

Watching Side by Side

NO attempt had been made to communicate with the Earth until escape had been won from the envelope of atmosphere surrounding the globe. Dr. Fry steadfastly had believed it would be possible to transmit and receive messages through space. So now he sent messages advising that all was well on the projectile, but refrained from mentioning Alicia's presence.

The scientist was puzzled at receiving no replies from the Earth. The projectile had been equipped with a high-powered station, with improvements designed for transmission through the ether of outer space. But nothing came. He was disappointed.

"A failure in that respect," he observed.

"But, perhaps, the messages are being received on Earth," suggested Randolph.

"I doubt it," returned the other. "The station in St. Louis has the same improvements we are using. If our messages get through, the replies would come."

The effort was repeated daily during the week that followed, but no messages came. It was as though the three adventurers were cut off from everybody and everything, had become living

flotsam and jetsam in a cosmic sea, and the outcome of their brave adventure on it was at best uncertain.

Alicia's presence proved a veritable godsend as the days passed. For there was a monotony that would have been intolerable but for her bright presence and her gay, light humor. She had taken charge of the elaborate and beautifully appointed kitchen, and had been much amused to see the world's foremost scientist washing dishes and a multimillionaire peeling potatoes or doing whatever she asked. She called them her kitchen police.

But the days passed slowly for all, it seemed, so eager were they to reach their destination. Mars increased in brilliancy as the distance between it and the projectile was shortened and the Earth, from which they were speeding, became but a disc, shining like a jewel against its background of black sky.

Dr. Fry took careful observations from time to time. He was glad to see at frequent intervals that they were holding on their plotted course.

"I don't see how we can possibly miss it," he told his companions.

"Well, I've been betting from the first we'd get there," said Randolph.

"And I too," said Alicia, with enthusiasm. "And I'm wondering if the Martians have good roads and motor cars, and, oh, yes, a decent café! I admit I'm a little tired of my own dishes."

Dr. Fry, although he confessed no misgivings, was less confident than they.

"I have hoped for the best, you may be sure," he told them, "but we can't possibly foresee what may await us there—provided always, of course, that we hit the target at which we aimed. And the Martians, even if intelligent creatures, may not be human beings at all, and, therefore," he warned, "they might be terribly unreasonable."

"And I'm betting on that, too," declared Randolph. "I still insist, as I used to, that we shall find human beings like ourselves."

"That's right," agreed the scientist, turning to Alicia. "He has had a bug on that since he was a boy at school."

Again and again Dr. Fry took observations and checked his figures for direction. The projectile had been wholly under gyroscopic control, and the calculations of the scientist showed the craft was definitely nearing the planet for which it had been aimed.

Mars, however, was still a long way off, some twelve to fifteen million miles, and a miss of a few thousand miles would be as fatal as if the distance were multiplied by itself. Henceforth Dr. Fry planned to keep a more constant watch of the planet and to take more frequent observations. If there were errors, the sooner he discovered them the better.

With painstaking care, Fry also kept track of the time. He was going now by what might be called dead reckoning so far as the distance covered in a given time was concerned. He had every reason to believe that the projectile was moving through space with a velocity of eleven hundred miles a minute, more than one and one-half million miles every twenty-four hours.

The scientist seemed to the others to be on watch almost constantly. Rarely was he anywhere but in the observatory, busy with his instruments. He was forever making calculations in the higher mathematics which they did not understand.

Larger and larger, as they swept through space, appeared the mass they were studying. It also became more distinct to the naked eye. Its outline could now be seen. Long since, however, they had trained a powerful telescope upon it, bring into strong relief the familiar markings on its surface.

Both Alicia and Randolph felt sure that the projectile's arrival on the planet was now only a matter of a few days.

But Fry was not so sure. Again and again he took observations and worked out his calculations. At length, when the mass toward which they were rushing loomed large to the naked eye, he discovered for the first time that the projectile seemed destined to pass the planet's orbit too soon. Accordingly, he decided that the time had come to gradually reduce their speed until they could depend wholly upon the planet's gravitational pull.

On sped the projectile with the planet looming larger hour by hour. And now the scientist was tense and expectant as he devoted himself to his observations. At last he sighed with relief as the others watched. He had determined beyond a doubt that the nose of the great shell was bearing gradually to the right.

A few days more and Dr. Fry was as a man transformed. Now he knew that gravitational pull had changed the course of the projectile and that it was headed straight for the planet.

It was an excited trio that now gazed at Mars and awaited the time when the projectile should enter the planet's atmosphere. All thought of food and rest had passed from their minds. Side by side the adventurers watched. The crucial moment was near at hand.

Dr. Fry had known that the atmospheric pressure on Mars was not so great as that on Earth, so he had perfected and employed a plan whereby those on board the projectile could become accustomed gradually to the change. Day after day for three weeks the pressure of atmosphere within the shell had been gradually lessened until now it was believed to approximate that of the planet they were about to enter.

Swiftly the mass of the red planet Mars grew in size. It seemed rushing to meet them. Gravitational pull had obviously increased the velocity of the projectile.

Now the planet's pull was so great that the plane of their flight became perceptibly changed. That is to say, it was approaching the perpendicular. They realized this when the deck of the craft began to incline. They were shooting downward more and more.

Meanwhile Fry was tensely watching his instruments. A gauge now indicated atmospheric pressure from outside the projectile. Then the scientist released forward rockets of atomic power to decelerate the velocity of the shell. It responded gratifyingly, and now the controls were brought into use with the craft leveled out and slowing to a cruising speed in the upper air strata.

The projectile passed over extensive areas far below, but the details could not yet be brought into view with even their strongest glasses. The craft was dropping gently to a lower level.

Dr. Fry, naturally daring in most things, was determined now to proceed with the greatest caution. Once more he theorized in explanation of his plan.

"It is generally believed," he told his companions, "that animate life on Mars is older than that on the Earth. It is therefore reasonable to suppose that if the planet is inhabited by intelligent creatures they are far in advance of ourselves. Eventually, of course, our presence on the planet will be discovered. Indeed, we should desire that, but it should be under circumstances favorable to us if possible."

They were still at a high level and were using their powerful glasses for observations. They discovered there was water, but less of it in proportion to the land areas than was the case on the Earth. What appeared to be vast dry ocean beds were seen stretching for great distances far beneath them. Also there were lines criss crossing wide expanses of terrain, and Dr Fry was delighted to find his theory regarding 'hem was proved. They were, after all, canals.

Alicia and Randolph were impatient to land, but Fry did not share their eagerness. He felt that, so far as the unknown element in their adventure was concerned, the greatest perils for himself and his companions might still lie ahead.

At length, however, they picked out a landing place and slowly descended to the surface of Mars.

And now it was as though Fate herself had decided that the projectile should land at a most inopportune time and in a region extremely dangerous. Hardly could the adventurers have chosen a less auspicious spot. Had they landed elsewhere than in the great craters of Dir, they would not have come in contact with the hairy Bat-men, who lived in an isolation as complete as if they inhabited another planet.

CHAPTER V

The Attack of the Bat-Men

BOTH Alicia and Randolph were enthusiastic as the projectile was lowered gently to the ground.

"I'm so tired," confessed the girl. "My feet are just aching, and this turf looks wonderful to me."

She had attired herself in knickers and stout boots. An automatic hung from her belt, and she carried a light but high-powered rifle. The two men armed themselves with heavy automatics and each carried a repeating rifle.

Eagerly the trio stepped forth upon a verdant plain for their first contact with a world other than their own.

There was not a sign of life revealed as the adventurers swept the surrounding country for miles with their powerful glasses. No bird nor beast was perceived, although it was apparent when they opened the door of the projectile that the atmosphere and its temperature were sufficient to support life. It was evidently midsummer in the latitude where they had landed. The plain on which the great shell rested was a rolling prairie covered with a heavy growth of grasses. There were flowers, too, which Alicia attempted to classify without much success.

But as no animate life was seen after reconnoitering for a radius of some hundreds of yards from the projectile, they returned to the craft for luncheon.

Dr. Fry emphatically vetoed Alicia's suggestion for an outdoor picnic.

"We mustn't think of such a thing," he declared, and Randolph agreed with him.

Although there was apparently nothing to fear, it was Dr. Fry's conclusion that until more was known about their new and strange environment it would be far safer to stick close to the projectile in which they could defend themselves from possible attack by retaliation or by flight. However, neither man demurred when Alicia announced she would go out and pick some flowers for the luncheon table.

Randolph from the observatory surveyed the plain on all sides before the girl set out. But he did not think to look overhead.

Alicia had not gone more than fifty yards from the projectile when the two men, standing at an open window, were horrified at seeing her snatched up from the ground by two strange flying creatures that suddenly descended upon her. The girl's scream was drowned by a roar from above, as hundreds of strange flying beasts hurled themselves upon the projectile.

The window at which the two men had stood was the only one open. Randolph had sufficient presence of mind to close it quickly and restrain Fry from leaping out in a futile attempt at the girl's rescue.

The scientist was suddenly frantic. He had seen his sweetheart lifted from the ground and borne swiftly up and away. But now he and Randolph were forced by the onslaught from the flying men to consider means of saving themselves and the craft, for any attempt at Alicia's rescue must depend upon their survival.

Randolph, a natural fighter, manned a machine gun and sprayed flapping swarms of the bat-like men. They fell like leaves in a storm, but more came. The air seemed to be literally filled with them. They could be heard on the roof of the projectile, clawing at the metal of the shell in vain attempts to gain entrance.

Fry was like a madman. He leapt to the controls that directed the blasting, destructive force of atomic power. Randolph screamed a warning just in time.

"For God's sake, Fry," he yelled above the rattle of his machine gun, "don't do that! We don't know where Alicia is. You might destroy her, too!"

THE scientist paled as he realized the danger. He went to another port on the opposite side of the craft and got a machine gun into action, killing in a fury and yelling like a savage as he saw the hairy shapes of the flying creatures tumble to the ground torn and bleeding.

These beasts were to live long in the memory of the two human beings who fought them and slew them in great numbers. The creatures had no weapons, but it could not be doubted that in a hand to hand encounter they would be formidable. Suggesting the gorilla somewhat in facial features, the Bat-men were covered with rough, coarse hair from head to foot. With powerful torsos and slender legs, they suggested the bat, for stretched along their thick, heavy arms were membranes that enabled them to fly with great rapidity. In size they were larger than human beings.

Never had either man seen such demonstrations of ferocity. The Bat-men hurled themselves constantly upon the craft. They climbed over it, peering through the windows and grimacing horribly.

The slaughter continued till it sickened the two men who had been responsible for the piles of dead creatures surrounding the shell.

"Great heavens, Randolph," cried Fry, at last, "what are we going to do? We're getting nowhere! Suggest something! We've got to save her!"

"But that's impossible so long as these beasts are attacking," replied Randolph, spraying the Bat-men with death the while.

"I have it!" exclaimed the scientist. "We'll ascend. That surely will get rid of them."

Dr. Fry set the rockets going and the projectile arose. The Bat-men continued to besiege the craft, tearing at the metal roof. It was observed, however, that none of the creatures followed the projectile on wing. Fry, in spite of his excitement and anxiety, attributed this to the rarefied atmosphere which forced them to fly at lower levels.

The projectile climbed rapidly. Yet the Bat-men on the roof continued to beat upon it with their great hairy hands. Now Fry reasoned that an even higher altitude would produce the desired effect.

At a higher level it was seen that many of the Bat-men leapt from the projectile with membranes closed, and dived for the warmer regions below. The hardier ones hung on for a time, but at last all of them had leapt into space to escape the bitter cold.

The projectile was now halted and allowed to drift in the upper air. The two men held council together.

"Our only hope, of course," said Randolph, "is the plane. Let's assemble it as quickly as possible."

There was a deck on the roof of the projectile from which to take off in the airplane snugly stowed under trap-doors opening into the runway. In half an hour the men had the light craft ready for flight. Both were skilled pilots, and the plane was armed with a machine gun.

The projectile was brought under such control, with its rocket power set at slow speed and its steering gear locked in position, as would cause it to soar slowly around Mars in circuitous flight at a high level. They could return to it in the plane at any time, whereas it was beyond the reach of the Bat-men because of its height.

Randolph took the pilot's seat in the plane at his companion's suggestion. Dr. Fry manned the machine gun.

The plane cruised swiftly here and there, darting over the

plain at a low level, searching for Alicia and her captors. There below it lay the huddled masses of dead Bat-men, but nowhere was there a sign of life of any kind. The surviving Bat-men had disappeared as completely as though they had deserted the craters.

CHAPTER VI

An Elemental Combat

ALICIA, surprised by the sudden assault, had been too terrified to think of using the automatic still in the holster at her belt, although she had seen the dreadful shapes in time to have accounted for at least one. But the next moment it was impossible. She had been lifted from the ground with a Bat-man on either side cruelly clutching her arms.

Alicia was a girl of courage, but the horror of her plight was too great, what with the nearness of the repulsive creatures and the pain their talons inflicted, and she swooned as she was borne over the plain. At last she opened her eyes and found herself in the presence of the two monsters, which, squatting on their haunches, were looking at her.

Pretending to swoon again, she closed her eyes, shutting the loathsome beasts from her vision. Meanwhile she took inventory of herself. She had suffered nothing. Apparently she was unhurt, although her arms were sore where her captors' talons had gripped them.

As though in sleep, the girl rolled over on her side, moving her right hand as she did so, and touched the automatic. Then she lay still. Nothing happened.

Now she stole a glance at the Bat-men through half-opened lids. They had not moved, but she saw them grimacing at each other. Then one lifted his great, hairy arm with its blue-black membrane closed and waved a gnarled thing of a hand at her. Fascinated, she observed the creatures, studying them and wondering if she might have a chance to escape.

The Bat-men for the moment did not appear to be so interested in her as in each other. The one that had made the gesture snarled as a guttural tone at which the other bared his powerful teeth. Alicia did not know that at that moment they were disputing the matter of her proprietorship.

The girl and the Bat-men were inside what appeared to be a grotto; at least, she could see that it was a kind of enclosure. Light streamed through broken, shapeless openings in the wall that extended upward some seven or eight feet.

Alicia moved her hand gently over the ground on which she lay. It was smooth in slight undulations. She guessed it to be stone, or, perhaps, lava, for she remembered that the projectile had descended into what obviously was a gigantic crater.

But the Bat-men held her attention. The controversy between them was increasing. Fiercer and fiercer grew the snarling of the creatures, which seemed quite to have forgotten her.

The one nearer to Alicia suddenly leaped upon the other in a furious attack, uttering a roar that startled her into a sitting posture. All at once the two beasts were struggling on the floor of the grotto, snarling horribly and rending each other with tooth and talon.

Alicia was in a panic of fear and horror, for now she knew intuitively that the conflict was because of her. The realization was sickening, but, spellbound, she witnessed the struggle, praying that the creatures might destroy each other, thus permitting her to escape.

The girl backed deeper into the grotto as the fighting Bat-men milled around in a circle, foam flying from their distended lips and blood streaming from their wounds. Never had she witnessed anything like this atavistic struggle. The din of the beasts' roars in the close confines of the grotto was deafening. Meanwhile, the girl was nauseated by a muskiike stench that rose from the creatures' writhing bodies.

SHE wondered, as the beasts fought, whether she might escape their notice and edge around to the opening used as an entrance. She determined to attempt it.

Moving with the utmost caution in the hope of attracting no attention to herself, she edged closer to the opening, one hand feeling the way along the lava wall and the other gripping her automatic. Not once, however, did she take her eyes off the brutes who were tearing at each other in what was evidently a fight to the death.

Alicia gained the opening and, stopping slightly, backed out of it as the two creatures fell to the floor, writhing in their agony and fury. And then, with the sunlight upon her and the sweet, fresh air in her nostrils, she turned from the grotto and fled, her automatic ready at hand.

She ran at first blindly, choosing no course, but she soon observed that she was running parallel to a long tier of grottoes. So she turned sharply away from the habitations of the Bat-men and courageously struck out for the open plain.

Alicia, as she ran, looked for the projectile, but without seeing it. Her captors no doubt had taken her a long distance, she reasoned, continuing her frenzied flight. She could not know that at that moment her friends were still struggling with the hairy hordes that had attacked them.

Exhausted by her efforts and her terrible experience, Alicia at last fell headlong in the soft, heavy grass, and lay panting in a dazed condition of mind. She had put more than a mile between herself and the grotto from which she had escaped.

The girl lay flat on her back, arms and legs extended in almost complete exhaustion. Dimly she was conscious that she was looking up at the pale sky in which no cloud appeared. Beneath her the soft, cool grass was as a bed. Before she realized it, Alicia grew drowsy. It was with the greatest effort that she was able to keep awake. In spite of herself, her eyes closed, but she did not sleep. She meant to lie there and rest awhile . . . then to struggle on . . . away from the horrible grottoes of the Bat-men.

Alicia thought, when she opened her eyes, that she saw a speck in the sky. And it seemed to her, too, that she could hear the faint, distant drone of a motor; but that was not possible, of course. But, yes, it was possible, she reasoned. She knew of the plane carried on the projectile. Perhaps Leonard and Randolph were out searching for her and were using the plane instead of the projectile.

Earnestly scanning the heavens, she could see nothing, but the idea persisted that she could hear a humming noise as of a motor. It was distant and faint and irregular in that it came and went. Then at last she told herself it was fancy, so she closed her eyes again, resting.

As the girl's strength returned, her faculties grew more alert. She tried to think what might happen, what course the two men might pursue in an effort to rescue her. She prayed that they had not been overwhelmed by the Bat-men but had been able to fight them off. Then she remembered the open window and feared the worst. Randolph, himself, powerful as she knew him to be, would still be no match for one of the Bat-men, nor could their weapons save them once the creatures gained entrance to the projectile.

If still alive, she knew, her friends would do everything in their power to reach her. And while at times she doubted that they had survived, she continued to hope and pray for their safety.

Now the drone of a motor again came to her straining ears. And it seemed to be closer. It was more distinct than it had been. Also it was continuous. Alicia sat up suddenly, looking overhead.

Then, as she half reclined on the grass with her elbow on the ground, she saw it. There it was, a sort of airplane, and it was rapidly descending. She watched its approach, never doubting it was her friends from the projectile. But in a little while she saw that that was impossible. For the approaching plane was unlike anything she had ever seen!

A minute, and it was settling lightly to the ground near her, its engine stilled. And its graceful, amber-colored wings reflected the sunlight as though the plane were a gigantic insect halted for a moment in its flight.

CHAPTER VII

Alicia's Rescue

WHAT Alicia now saw presented such a contrast to her past experiences that for a moment she was unnerved. She had just fled from the most horrible creatures it had ever been her misfortune to behold, and now approaching her was one of the most magnificent human beings she had ever dreamed of existing. He was a strong, stalwart young man. Could he be a Martian?

Alicia tried to arise, but her exertions already had been great and she fell back weakly. She turned her head, however, and kept her eyes fixed upon the man who had left his plane and was running swiftly toward her. Another moment, and he had knelt on the ground beside her, deep wonderment showing in his eyes as he scanned her face.

For only a moment did the man bend over her. While she smiled up at him, now confident of safety. Then he was suddenly alert, as though in alarm. Picking her up bodily, he ran to his craft, the engine of which he started immediately. The machine rose vertically and at great speed just in time to escape the rush of a dozen or more Bat-men that flapped in fury below them. Ascending to a greater height, her rescuer cleared the walls of the crater to take a direct course at great speed.

As they flew, Alicia studied her companion. He had addressed a few words to her, but as she shook her head a puzzled look had come into his eyes.

Now and then the man would look at her searchingly, addressing her again and again in a futile effort at communication. But it was no use. She could understand nothing of what he said.

Meanwhile, Alicia wondered how she could let her rescuer know of the plight of her friends. She knew that if they had survived they would continue their efforts to free her from the Bat-men, and that great danger threatened them as long as they did not know that she was no longer held captive. How to get a message to them was now her greatest concern. As to her rescuer, she felt perfectly safe with him. Young, handsome and as virile a type of manhood as she had ever seen, he obviously was the product of a highly-developed civilization.

They flew on for about two hours and then descended as they approached a strange city. Alicia gazed in wonder at the beauty of the scene before her. She had already concluded there was a high culture on the planet. Her contact with the stalwart fellow who had so opportunely saved her had verified it.

The city before the girl's wondering eyes lay nestled in a narrow valley guarded by high, rugged mountains that boldly thrust upward and reflected iridescent colors in the bright sunlight. They were still too far away for her to make anything of the architecture, so the first impression Alicia had was a riot of gay color. Like a jewel in a rough, picturesque setting lay the city, its buildings a variety of shades that shone in the distance with a pleasing harmony of design.

THEY landed on a runway in the grounds of an imposing structure standing on an eminence overlooking the city. The girl's companion escorted her into the building, where, within a few minutes, Alicia found herself the center of a group of men who regarded her with the utmost courtesy and ceremony, but with a curiosity they failed to conceal.

One after another addressed her. She could only shake her head and smile. Finally they ceased questioning her and conversed together. Meanwhile, her escort, younger than the others, and apparently pleased with his achievement in bringing here hither, smilingly stood near as though to reassure her.

There were eight or ten men in the group. All of them were somewhat distinguished in appearance and in fact they impressed Alicia as being of scholarly type. Their manner, she observed, was dignified and even profound. The girl felt that she had been brought to an institution of some kind, and this speculation was supported a few minutes later when she was taken to a large hall used as an observatory. Instruments were to be seen here and there in orderly array. The girl caught sight of a gigantic telescope at the end of the hall. She also saw a planetarium at a distance while from the smooth marble walls hung charts of many sizes.

One of the group, an elderly, stately man of great dignity and gracious bearing, turned to his companions and made a suggestion. Alicia, of course, did not understand, yet she sensed at once the effect of the old man's words on the others. She noted that their attitude changed instantly, their thoughtfulness giving way to a wonderment in which it was evident there was mixed a great deal of excitement. And she was certain that what he had said concerned her.

The white-haired patriarch, whom the others had addressed as Horo, now beckoned to Alicia. She stepped forward and he led her to a corner of the great hall. Before them was a planetarium, an instrument with which she was familiar, although she had never before seen the solar system so beautifully presented in miniature. It plainly was a work of art, attesting at once the high mechanical skill and scientific knowledge here.

Horo took a slender rod and touched the sun of the planetarium, glancing inquiringly at Alicia.

The girl nodded that she understood.

Next, Horo touched the fourth planet from the sun which she knew to be Mars. Then he bowed to her and placed his hands on his breast after a wide, sweeping gesture with his outspread arms.

Alicia knew just what he meant, and so indicated with a smile.

Now Horo offered her the rod, which she took and at once indicated the third planet from the sun, which was the Earth, her own world. Then she bowed to the group with her hands on her heart.

Amazement spread over the faces of all, and Horo, who had been the first to conceive the idea that she must be from another world, was in ecstasy because of his discovery. Eagerly he grasped Alicia by the hand again and led her to a chart on the wall. Swiftly he turned the sheets over till it was her turn to show amazement, for Horo now exposed a projection of the Earth's surface that actually showed the continents with a fidelity of outline that amazed her.

Here, indeed, was a skill in astronomy that was marvelous! Certainly, she conjectured, Leonard Fry would be entranced with it. And now she gave thought anew to the problem that had been constantly in her mind, but for which she had found no solution.

She looked about her for the one medium with which she might be able to express herself. Presently she found what she sought, and now with parchment of a fine texture and a crayon in her hands she became the center of interest.

Rapidly she sketched the projectile in flight between the two planets. Not a word was spoken by anyone, but the Martians all hung over her shoulder in astonishment. She showed her two companions of the journey.

NOW she pictured herself leaving the projectile and gathering flowers in the crater where they had landed, while her friends remained on board. Next there was a sketch of herself being borne away by the horrible Bat-men. Everyone shuddered as she looked up after picturing the grotto to which she had been carried and her escape and rescue

Alicia now turned to see her handsome rescuer standing a little in the rear. She welcomed him with a smile and advanced to take his hand and thank him with her eyes. The handsome Martian bent low in a graceful gesture of acknowledgment.

So now the Martians knew what she had been longing to tell them. She hoped they could do something to relieve the situation, which she knew was desperate and would remain so until her friends could be appraised of her safety and whereabouts.

Horo, evidently the leader of the group, smiled and conducted her to another room of the extensive building. The room held many glittering instruments, some of which seemed familiar.

Horo led her directly to a contrivance which she guessed was a transmitter of some kind. The Martian touched a switch and spoke directly into the instrument. Then he invited her to do likewise.

Hopefully—for she had no way of knowing for certain that it was a kind of radio microphone—she stood before the instrument and spoke into it.

"Leonard!" she called. "Can you hear me? This is Alicia!"

She waited a few moments and repeated it.

The thought ran through her mind that her friends might not be in the projectile at the time. Perhaps they were even now scouting in the plane or engaged in combat with the Bat-men in the crater.

Once more she called, wondering whether this instrument she was using could be employed as a medium to communicate with one constructed on another world. She did not know that the silent Martians beside her were not worrying about that, for they had long ago developed a method for use in such emergencies. As a matter of fact, it was accomplished by manifolding the message itself, which was actually transmitted over various wavelengths and could thus be heard by any receiving set in operation on the planet.

There was no reply, but she called again.

And now the entire group was electrified as the answer came from a large amplifier.

"Thank God! Alicia!" said the voice. "Where are you?" It was Fry speaking.

"Safe with friends, dear," Alicia replied. "Are you safe, all right?"

"Both of us, yes!" came the answer. "And you're with friends, you say. What does that mean?"

"I was rescued by a Martian aviator after escaping from those horrid beasts," she explained, "and I am safe and sound in a city about two hours flight from the crater. But I don't know what the direction is, and I can't communicate with these people. But I am perfectly safe with them. What do you suggest?"

"Well, if a flier came out we could easily follow him in. That ought to be easy, you know."

"Yes, of course," the girl agreed, "and I'll try to make them understand. Stay near the crater and surely I'll find a way to reach you. I'll come, too, Leonard, dear."

But Alicia did not know that this permission would be withheld from her, and that, by direct order of the Kor of Osin, in the capital city of Hio to which she had come, she would be held virtually a prisoner.

CHAPTER VIII

The Projectile's Arrival

THE great shell was being held directly over the craters at a height too great for the Bat-men to reach, and there Fry and Randolph waited. Both were tremendously interested in the developments that had come so suddenly after their heartbreaking efforts to find Alicia.

They had feared the worst, that the girl had been destroyed by the Bat-men. Repeatedly they had flown in the plane to every point in the series of craters, but the vigilance of the Bat-men, now thoroughly aroused, had prevented them from making a thorough search. Landing had been quite impossible, and they feared to employ the atomic power of the projectile because they did not know Alicia's whereabouts. What would destroy the Bat-men might also be fatal to her. Full of dejection, they had returned to the projectile. And it was there, by great good luck, that the radio message found them.

The next morning, a few hours after sunrise, the two men sighted a speck in the sky, many miles distant. They watched its approached with intense excitement. They did not doubt that it was a Martian flier coming to pilot them to the city.

The craft was the same one on which Alicia had made her escape from the crater and the Bat-men, and it was again piloted by the Martian who had rescued her. It was unlike anything the men had ever seen. It was a combination of monoplane and helicopter, and was capable of both vertical and horizontal flight. It was elaborate of finish and design and remarkably swift. They marveled at the grace of its flight and its speed, for within a few minutes after they had sighted it the plane was stilled alongside the projectile. Then a man like themselves smiled engagingly and pointed in the direction whence he had come.

Dr. Fry turned to Randolph.

"Alicia did not come. I wonder why."

"Done up, probably," replied Randolph. "But he seems all right, don't you think?"

"Yes, for of course he's the pilot sent out to direct us. I am perfectly willing to follow him."

Dr. Fry nodded his acceptance of the flyer's invitation, and instantly the plane was off.

The projectile followed. The two men in it were amused as the Martian continued to look back, obviously to see whether they could keep pace with him. He could not know, they reflected with amusement, that the projectile from the Earth could fly all around the planet of Mars within a few minutes.

The flight to the city was without incident. On arriving, the pilot of the Martian plane swept in graceful curves to a landing field, and alighted. The projectile followed under perfect control and came to a gentle rest on the ground before a concourse of people gathered to witness the arrival of visitors from another world.

At once a heavy guard was placed around the great shell. The multitude had begun to press forward. Human curiosity, the Earth-men discovered, was the same everywhere.

Dr. Fry turned on leaving the projectile and encountered the Martian who had escorted them to the city. He could not speak to the pilot and be understood, but he motioned first at the projectile and then at the guard. The Martian showed that he understood. He spoke to the people, directing their attention to the guard and to the projectile itself. His words and his manner seemed to be emphatic and effective, since the crowd fell back before the guard and kept their distance. Then the pilot leading the way through the human mass, which separated to give them passage, conducted them to an elaborate, rich-looking carriage. The pilot halted them a short distance away and stood at attention.

THE carriage, propelled by engines, was ornate in design, a graceful equipage fit for a king. And that in fact was what it was—the royal carriage of the Kor of Osin, who had deigned to visit the landing field and witness the arrival of human beings from another world.

The Martian escorted the Earth-men to the door of the carriage and halted there, bowing almost to the ground. The adventurers stood erect, and now they caught sight of Alicia seated in the carriage beside a man whom they took to be a person of distinction. This, although they did not know it at the time, was the Kor of Osin, ruler of the Martian nation.

(Continued on page 1052)

The Sky Ruler

(*Continued from page 1025*)

"But don't fire upon her unless it is to save our lives. If I had the plans in my possession I'd say 'give her hell!' But if we destroy the ship we destroy the plans. I must have one or the other!"

The officers saluted and turned away. Lined on the deck on both ends of the towering Magnetic Ray Projector, mounted anti-aircraft guns were ready for instant action.

CHAPTER VII

An Astonishing Answer

THERE was something pitiful in the appearance of the *Sky Urchin* as it was drawn irresistably down toward the projection tower, tail fore-most. It seemed like a great, indomitable monster that had given up a struggle in total exhaustion, like a sword-fish, tired out, rolling over on its back and being drawn forward on a taut line. But the *Sky Urchin* had not rolled over in utter despair. It remained on even keel, though its tail pointed downward at a slight angle.

Suddenly possessed with a growing fear that the Sky Ruler might destroy the great airship rather than submit to inevitable apprehension, Professor Markleson groaned aloud. And there was no way in the world to prevent such a disaster should the adventurous pirate feel the urge to release its gravity repellent and crash it to earth or explode its fuel stores! But, strangely, nothing like that occurred. Not a sign of life existed upon the huge craft as the scientist studied her transparent bands with his binoculars. The control cabin and the observation compartments seemed utterly deserted.

Slowly but surely the ship was being drawn down, as Jack Reeves retracted the magnetic beam. Now she lay hardly more than a half mile away, glistening brilliantly in the rays of a westering sun. Then, to the astonishment of all who beheld the ship, a black dot appeared in the air directly under her. Almost instantly the dot was swaying in the skies like a great pendulum, suspended under a bulging parachute! Professor Markleson watched it through his glass. A man had left the *Sky Urchin!* Then another dot appeared, and another, each becoming suspended as their parachutes bulged open. At once three high-powered police cars opened their deep-throated exhausts and roared away in the direction of the floating pirates.

Hardly had they disappeared from the isolated area than from the *Sky Urchin* came pouring a steady stream of machine gun slugs. They whined around the scientist like so many bees. Then, as suddenly as they had come, the muffled throb of the guns ceased as a row of dots appeared under the craft's belly. More parachutes bulged, but they carried their cargoes down to eager, waiting hands! The guns roared again, and the professor stood calm in a rain of singing shells. They hummed melodies of death about his ears and spattered dirt everywhere as they plopped into the ground, only fifty yards away. An anti-aircraft gun suddenly roared. A shell cracked fifty feet beyond the *Sky Urchin*.

Markleson saw two more parachutes open under atmospheric resistance. Then another man leapt from the *Sky Urchin*. The scientist watched him through his glass. The man wore no parachute! He thought that the man wore a tight-fitting flying outfit of black—but he was not sure. He could not believe that the Sky Ruler would elect to take his own life by suicide. The man could easily have destroyed himself instantly had he elected to explode the *Sky Urchin!* A long time to think about death—falling 2000 feet! The man tumbled, head over heels through the air to vanish behind a bank of foliage a quarter of a mile away. Professor Markleson shuddered, imagining that he heard the dull thud of the body as it smashed.

* * * *

AN hour later, unerring steps drew Professor Markleson to the Police morgue in Washington. Despite the fact that his brain pounded in protest, an irresistible something drew him on with a force comparable to the magnetic beam that brought the *Sky Urchin* to rest its nose against Jack Reeves' anchoring-projection tower. Was it the magnetism that exists between two very dear friends that caused him to respond to the urge to visit the morgue? Or was it just morbid curiosity to learn if Doctor Mars Jorgstedt had died or was suffering the mortal agony of fatal injuries? Whatever it was, it attracted him, protestingly, to the forbidding gray building off the wide, traffic-jammed avenues.

He entered without a pause and was met by a blue-coated minion of the law.

"I am Professor Markleson, Captain," he said, his lips trembling. "I want to see the man who killed himself by jumping out of the *Sky Urchin* today. I have a feeling that I might know him personally!"

"Certainly, Professor!" the captain replied at once. "Go right in—first door to the left. But there's another gent in there. He's a dead ringer for the poor devil!"

"A dead ringer—do they have a close resemblance?" the scientist asked strangely. He felt suddenly sick at heart.

The captain groaned at him curiously.

"If they'd been cast in the same mold they couldn't look more alike, Professor!" he replied. "Go on in!"

Quietly the scientist swung open the door and entered the first room to the left. He paused just inside, his hand still on the door knob, and stared from one face to another—the dead and the living! Then with a light step he strode to the side of his friend, Dr. Jorgstedt.

"Will you ever forgive me, Doctor?" he said softly, his face sad and forlorn. He placed an arm about the other's shoulders and peered into the deep-set features of the dead, broken man on the slab. He wore neatly-trimmed whiskers, Van Dyke style. The scientist scrutinized the deep-set features of his friend. A tear was streaming down the latter's tanned cheek.

"Who is he, Doctor?" asked Markleson. "Do you know him?"

The famous astronomer peered into his friend's forlorn face.

"Few people knew that I had a brother—a twin brother," he replied, erasing the stinging tear with a shaking finger. "He was taken away from me about a year before you and I became acquainted, to be placed in a house of correction until he was 21. Evil influences had got hold of him, and as he grew older he mired himself deep in crime. I have seen him but five times in fifteen years. The last time was two years ago in Arizona. He swore to go straight, but on learning somehow of your wonderful ship, he must have succumbed again to an urge for adventure. Consequently he lies here—on the last frontier—Death!"

"Then you knew all along who had taken the *Sky Urchin?*"

"No, not until you explained your case of mistaken identity in the lounge of the Scientists' Club, my friend," the astronomer replied. From sheer love for this brother I could not tell you my secret then!"

"You are to be admired for your loyalty, Doctor, just for that!" Professor Markleson reached down and grasped his hand. "I'm sorry that it was I who caused his death."

"He did not blame you! Nor did I! It was his own due reward!" said Dr. Jorgstedt sternly. "They found on him a letter addressed to me which told where the packet of papers holding your plans was to be found. In his letter, he asked that you do not judge him too harshly!"

Professor Markleson nodded and grasped his friend warmly by the arm. They strode out of the room together and into the street amid the shrill cries of the newsboys and the roar of traffic, hearing nothing, each was lost in his own thoughts!

THE END

The Air Trap

(*Continued from page 973*)

distance ahead, and a ray of hope revived the pilot. With set teeth he plunged on and in a few more minutes had reached the first clump of trees where he sank wearily to the ground. There was a glow of the devilish hue about him, but it was very faint and too weak to prove harmful.

"Tom," the weak voice of his companion attracted his attention. "Go on, Tom. Get out of here. You've got a chance, if you beat it."

"Don't worry, Jim, we're both out of it. The fresh air will soon have you back on your feet."

But the storm had passed and the ground rapidly drying before Jim could exert sufficient strength to regain his feet.

"How are you feeling, Jim?"

"Pretty shaky. No life in me at all. No taste, no feeling—"

"Well, you'll soon pull back. I'm just about O.K. again now. But you'll pull up faster if we get farther away from this cursed place. Here, lean on me and we'll take our time."

"How in the devil any air bandits could exist in a place like that beats me," Jim remarked as they slowly made their way back towards their plane.

"That's one reason why there are none there."

"What?"

"What we said about a magnetic field existing over the valley was right," Tom grinned. "There is one there, but it was not put there by any air bandits. That valley has a deposit of some curious mineral that is continually giving off energy in the form of electro-static. The whole valley is located over this bed. This electro-static leakage continues all the time and keeps the soil and the air of the place in an unhealthy condition. That's why you see no vegetation, flies or other life in there. The natives knew that there was something unhealthy about the place and kept away from it. Now one proof that this queer mineral deposit is giving off static electricity is the fact that when the ground becomes moist the energy escapes at a faster rate, until you can see it at night in the form of amber-colored shoots of fire. Also—"

"BUT do you mean that just because the air becomes moist, the static in the air over the valley increases so much that it even paralyzes the ignition systems of the planes?"

"Whenever it is raining," Tom replied, "there is usually a thunderstorm passing over the valley. The clouds in this storm are charged with a potential opposite to that of the ground and occasionally the difference of pressure of the two forces is sufficient to cause a lightning bolt to strike the earth some where. That discharge of lightning looks like a discharge from the sky to the earth but really there is as much energy passing from the earth to the sky along that flash during the discharge. Now, when a storm passes over the valley, its clouds, charged oppositely to that of the forces in the valley, cause a drawing effect on them, and the leakage of energy from the ground to the sky increases greatly as it passes up in an attempt to neutralize the forces of opposite charge in the clouds. Also the moisture in the air and the ground increase the conductivity of the air between the clouds and the ground.

"This valley, Jim, seems to be an endless and limitless source of such energy, and during a storm it releases such a heavy discharge of static that it drowns out radio signals, makes the compass freeze and point up and down, affects the human system producing that sick tired feeling. And when the difference of pressure becomes very great, the discharge from the valley is so violent that fire and electrical energy will leak off into the air from every sharp point or object that is touching the ground and pass straight up into the air.

"The magnetic force of that field over the valley is so great during a thunderstorm that the ignition generators of the planes are affected so that they start missing and sputtering. As a ship enters into the heart of the powerful static field between the clouds and the valley, the plane's ignition system steadily becomes worse as the electrical energy fails. But the effects of the magnetic fields alone are not responsible for the death of Weldon or the others who will likely be found in that valley. There is a poisonous element in that mineral deposit under the valley and it leaks off with the static discharges. It is this that poisons the air, and if you remain in the place long enough will kill you completely."

"Wait 'till Watson hears about this, Tom," Jim said wearily.

"Yes, I expect there'll be a few government inspectors that will get transferred from the South African territory when Watson lets loose."

THE END.

The Arctic Rescue

(*Continued from page 983*)

tioning as well as could be expected. I turned the *Great Whale's* tail as high as possible, and we floated right for the hilltop.

The captain got his landing rope ready and prepared to lasso the flagstaff.

"If I miss it," he said, "maybe the rope is long enough for some of those who are standing down below to grab ahold of it. Here's hoping!"

But he did not miss. As we sailed over its top, he dropped a noose with unerring aim fairly over the staff and drew it tight. Willard and I caught hold to help steady the ship and bring it to a gradual stop as the rope paid out.

We held our breath for fear the sudden strain would snap the flagpole. But our gallant craft responded nobly; she swung around into the wind, and with the painted banner flung wide, came to a standstill.

A great shout went up from the erstwhile breathless crowd, while factory and fire whistles all over the city let loose in concert, answered by the deeper voices of the ocean liners and by the smaller craft far up and down the river.

The flight of the *Great Whale* was over.

THE END.

The Invisible Destroyer

(*Continued from page 1013*)

Briefly, then, he recounted for a second time our experiences during our absence. When he had concluded, and had answered a few of Kieth's questions, Harwood came forward with a suggestion.

"Say, Vachell, I think Kieth's arrival settles the question as to how we shall notify the world of our return. He can make a trip back to the States in his plane."

"That's a fine idea," the scientist replied; then he frowned in thought. "I wonder—by Jove! It would work! What do you think of this? Kieth will return to North America where the Russian has his headquarters, and spread the report that we're back. He'll make sure that the news reaches Demetriovich's ears. When he hears it, he'll naturally rush here to verify the report; and that will be our opportunity to use our weapons, and rid the world of its menace."

"And at the same time, Kieth," Harwood added, "you can have some of the officials at Washington send a number of transoceanic planes to take us from the island. If things turn out the way we expect them to, we'll be in a position to sign the World Union Pact in a short time; but our immediate concern after getting rid of Demetriovich will be to undo whatever damage he has done."

Kieth nodded. "I'll do the best I can about that," he said, "but I'll meet with quite a bit of difficulty. Demetriovich has placed every nation under the direct control of his Russian followers. He quells any disturbances that arise with that accursed cone of his; and right now, he is completing three other cones for the use of his lieutenants. Commerce and industry are at a standstill as a result of the Russian's radical methods. People are starving! And all this damage caused by one man! It's awful to contemplate!" He was silent for a moment, then exclaimed:

"Well, the sooner I get back and start things moving, that much quicker will order be restored."

A New Attack

TURNING, he moved toward his plane. We followed, and as he soared into the air some moments later, watched his eastern flight until he disappeared in the distance.

The rest of that day and all of the following night passed all too slowly and—the night—sleeplessly for most of us on the island. We feared a night attack by the Russian, and kept great beacon lights from the landing field trained upon the sky. The rising sun received a hearty welcome in the morning.

That morning seemed endless, with nothing occurring to break the monotony of waiting. Noon came—and suddenly a cry arose from one of the men appointed as a lookout.

"He's coming!"

In a moment we had gathered in a scattered group on the lawn before the Union Hall. While we waited, we looked to our glass ray-filter bands and our rods, to be certain that all was in readiness for Demetriovich's destruction.

A minute of anxious waiting—then the cone was above us. We expected to hear the thunderous voice, but no voice came. Instead, a blinding, white ray flashed down upon us. The island seemed to tremble under our feet.

At the same time that he released the ray upon us, a veritable shower of thin, intensely powerful beams darted up toward the cone from the balls on the tips of our metal rods. Had it not been for our lack of experience in operating our strange weapons, and our consequent erratic aim, Demetriovich and his cone would have been blasted into a cinder. As it was, only a few of the rays hit their mark; but so effectual was the work of those few, that the white ray was snuffed out, and the cone staggered!

It had evidently escaped serious injury, for a second after our rays struck—indeed, before we could adjust our aim, the cone leaped high into the air. Our rays followed, and evidently took some effect in spite of the cone's increased altitude, for, a moment later, like a frightened hare, it darted away in the direction from whence it had come.

Some of the men began shouting triumphantly. Vachell raised his hand for silence.

"There's nothing to shout about," he frowned. "I feel anything but elated. Although we did escape unscathed from the Russian's rays, our victory was empty. Demetriovich escaped. And now he knows that we are able to resist his rays, and that we have weapons with which to fight against him. Who can tell what he'll do next!

"And remember this—although we are unaffected by his rays, the same is not true of the island. If he returns and floods us with the rays that bring about the travel through the vibratory scale, the island will vanish from beneath our feet, and we'll all be drowned!"

"The only way out that I can see," Vachell said after a pause, "is to send a radio message for help, and leave the island as soon as possible."

In a moment the entire group had started toward the tower that held the radio transmitter. But when we arrived there, our only hope was destroyed; the radio was useless. The Russian's rays, although they hadn't injured us, had left the transmitter burned out, blackened, wrecked beyond all repair.

We returned to the Union Building in dejection. Shortly before we reached it, Harwood addressed Vachell.

"Leo," he said, "our position isn't so hopeless, after all. If Demetriovich does return with his cone, before he learns that we alone can resist his rays, and that the island, itself, is unprotected, we will have destroyed him. Our aim won't be as inaccurate the second time as it was the first."

"I suppose you're right," Vachell replied. "At any rate, it seems that all we can do now is wait. If only we hadn't left our plane in that other world, we could carry the conflict to the Russian. But—we left it!"

The balance of the day dragged by on leaden feet. As night approached, we became restless, apprehensive. Nor were our spirits buoyed up by the discovery that the searchlights that we had used the night before were burned out. We would have to spend the night in darkness. If the cone returned, we would be unable to detect its approach.

Darkness found us waiting. We were all close to exhaustion, yet we dared not sleep. There was little or no conversation; for some reason we had no desire to talk.

Hour after hour passed by. One o'clock came—then two, and without warning four wide beams of violet radiance split the blackness. They came from the different points of the compass, and converged on one central point.

Four cones—could we overcome them?

WE centered our efforts on one of them, aiming at the source of the violet beam. Suddenly the ray from that cone was snuffed out, and a moment later, a loud crash some distance away told us that one of our combatants was out of the fight.

The destruction of the first cone had taken but a moment; quickly we turned our attention to a second. A beam of red descended from this cone now, a beam that set nearby shrubberry afire, but that had no effect upon us. We showered our slender rays upon it to such good effect, that it, too, was snuffed out!

Only two cones remained, and we had not been harmed!

As we turned toward the third, both cones darted high into the air. Then, twin streams of white leaped from them; the

island shuddered under the impact. It was the ray that caused the passage into other vibratory worlds! Frantically we sent our rays flashing upward.

A fleeting picture passed through my mind, a picture of all of us falling into a bottomless pit—of mighty walls of water rushing in upon us—of motionless, floating bodies . . .

Fortune was with us! Our rays again found their mark, and the third cone fell to the island like a plummet!

One more cone to destroy! But was there time? The island was almost gone! Our footing was becoming insecure. The island, wavering on the borderline between the worlds! The cone was darting here and there erratically, now; we could not follow with our rays. A moment more, and it would be ended! A moment more—

A sudden, sharp explosion—an ear-splitting crash that shook the earth—and the white beam was gone; the island was solid under our feet!

We stared at each other in wonder by the fitful light of the burning shrubbery. On the brink of destruction, and a bolt from above had saved us. What had been the cause of that explosion? Something amiss in the cone, perhaps, effected by our rays?

And then we saw the helicopter. Swaying drunkenly from side to side, its motors dead, supported only by its buoyancy tanks, it settled slowly to the earth. It landed a short distance away.

Quickly we rushed over to the plane. Its entire front was smashed in. And amid the wreckage, the lower half of his body crushed to a bloody pulp, we found Kieth. He was still conscious. His face, smiling wanly, seen by the flickering light, looked ghastly.

Clasping Vachell's hand weakly, he whispered:

"Well, Leo, I guess it's almost over. But I'm satisfied. Ever since Demetriovich began his insane actions, I've felt guilty In a measure I was responsible, for I was the one who goaded him on back there in the Alleghenies. I—I wanted to make amends."

His voice grew weaker—was barely audible.

"When his cones left the—the mainland several hours ago, I followed close behind in—in my plane. I had three nitro-bombs with me; two of them missed their target, but the third one scored a hit. I was too close to the cone when it exploded, and I—I think part of the—cone—struck my—my—plane."

His voice trailed off into silence. He stiffened convulsively; shuddered; and suddenly grew limp. He was dead. He had died for a cause—a martyr.

Almost over night the world was restored to normalcy. With the menace of the Russian removed, commerce and industry resumed activity.

After the affairs of the earth had been righted, the world executives gathered in the Union Hall, and without pomp or ceremony, signed the pledge that united all nations under one International Government. And under its sane and intelligent ruling, the world, today, is enjoying a prosperity unparalleled in history.

The remains of Demetriovich's cones are in the International Museum, along with the ray-repellent bands, and the metal rods. They are things that are out of place in our present peaceful world. In the museum they lie, mute evidence of the truth of the well-nigh incredible history of the forming of the World Union.

And finally, today a great monument is standing on the Union Island, looking out over the sea. It is the statue of a slender, intelligent-faced man who seems to be looking thoughtfully ahead, a man who, indirectly, helped to bring chaos upon the world, and who gave his life to restore order. A statue of Allen Kieth, martyr.

THE END.

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WE want a catchy slogan for this magazine. Slogans are used universally in many different lines of business, and we believe that this magazine should be known by its own slogan.

Such slogans as "NOT A COUGH IN A CARLOAD"; "GOOD TO THE LAST DROP"; "SAY IT WITH FLOWERS," etc., are well known. A number of magazines have already adopted slogans, such, for instance, as "Popular Mechanics," with "WRITTEN SO YOU CAN UNDERSTAND IT"

We are offering $100.00 for a novel, as well as descriptive, catchy phrase, which we shall use after the end of the contest as a permanent slogan of this magazine.

REMEMBER, THERE IS NOTHING TO BUY OR TO SELL! You have an equal chance to win this prize, regardless of whether or not you are a subscriber. The contest is open to all. Get your friends in on this and, if they give you suggestions, you may split the prize with them, if you so desire.

To win the $100.00 prize, you must submit only a single slogan, ONE ONLY. It must be an original idea. It makes no difference who you are or where you live, whether in this country or not; anyone may compete in this contest and you may be the winner

Look this magazine over carefully and try to find out what it stands for, what its ideals are, and what it tries to accomplish. Then try to put all of your findings into a slogan which must not, under any circumstances, have more than seven words.

After you have the idea, try to improve upon it by shortening the slogan and making it sound more euphonious; but always remember that it is the idea which counts. The cleverer the slogan, and the better it expresses the ideas for which this magazine stands, the more likely are you to win the prize.

No great amount of time need be spent in the preparation of slogans. Start thinking right now and jot down your thoughts. Also, tell your friends about it, and get them to submit slogans of their own, or compose one in partnership with them.

Here are a couple of sample slogans; which are given as mere suggestions, AND NOT TO BE USED AS ENTRIES:

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"SCIENCE AVIATION OF THE FUTURE"

RULES FOR THE CONTEST

(1) The slogan contest is open to everyone except members of the organization of AIR WONDER STORIES and their families.
(2) Each contestant may send in only one slogan; no more.
(3) Slogans must be written legibly or typed on the special coupon published on page 1043 of this magazine. (If you do not wish to cut the magazine, copy the coupon on a sheet of paper exactly the same size as the coupon.) Use only ink or typewriter; pencilled matter will not be considered.
(4) Each slogan must be accompanied by a letter stating in 300 words, or less, your reasons for selecting this slogan.
(5) In case of duplication of a slogan, the judges will award the prize to the writer of the best letter, the one which, in their opinion, gives the most logical reasons for the slogan.

This contest closes on May 1, 1930, at which time all entries must be in this office; and the name of the winner will be announced in the July, 1930, issue of AIR WONDER STORIES, on publication of which the prize will be paid.

Because of the large number of entries which may be expected, the publishers cannot enter into correspondence regarding this contest.

Address all communications to:

Editor, Slogan Contest
Care of AIR WONDER STORIES
96-98 Park Place New York, N. Y.

AVIATION FORUM

THIS department is open to readers who wish to have answered questions on Aviation. As far as space will permit, all questions deemed of general interest to our readers will be answered here. And where possible illustrations will be used to answer the questions. Queries should be brief, and not more than three should be put in any letter. Address all communications to the Editor.

What is a "Pancake?"

Editor, Aviation Forum:

I am a science fiction enthusiast but know very little about airplanes. Would you please answer two or three queries upon the subject?

1 In a newspaper account an aviator was said to have "pancaked." What relation has this gastronomical delicacy to a plane?

2 Who was the first man to fly across the English Channel?

3. What effect does rain have on a balloon?

MAXIMILLIAN D. WATT,
1st Chem. Co.,
Corozal, Canal Zone.

(1. A plane is said to have "pancaked" when it has been leveled off at a greater altitude than is normal in a landing. Which means that it leveled off too soon. This procedure will cause it to stall and to descend on a rather steeply inclined path with the wings at a very large angle of attack and with practically no appreciable bank whatsoever.

2. A Frenchman Louis Blériot, in a monoplane of his own design and construction, powered by a small three cylinder motor-cycle type air-cooled engine of about 20 horsepower, flew the twenty one miles between Calais and Dover in twenty three minutes an average of fifty-three miles per hour. This flight was made on July 25, 1909, and the aviator had perfect control over his machine. Skeptics had been awaiting a disastrous outcome but so thorough had been the planning of the flight that after reaching the English shore, Blériot circled around for a while to display his confidence in the craft before seeking a landing place.

3 Inclement weather very often produces a noticeable effect upon balloons and dirigibles. Rain will cool the gas within the bag, causing it to decrease in volume. Obviously since a balloon's ascension is primarily dependent upon the volume of its gas the effective lift will be reduced. While light snow may blow off, heavy wet snow or sleet will build up on the bag or cars and weigh the ship down.

A clear sky frequently produces an interesting effect on a balloon in flight. When the sun's rays are very strong they will heat the gas and cause it to expand. This will increase its volume and effective lift.—*Editor.*)

How Fast Can a Man Fall?

Editor Aviation Forum:

What is the greatest speed an average sized man can obtain while falling freely through the air? What determines the speed?

F. MacCOLLUCH,
Mt. Clemens, Mich.

(The greatest speed is 132 miles per hour. At that point the increase of speed due to gravity is counter-balanced by the increased resistance of the air.

For although the man's speed is increasing normally due to the acceleration of gravity, the resistance due to the air is being increased by the square of the speed.—*Editor.*)

The Height of Atmosphere

Editor, Aviation Forum:

Not long ago the question arose at school as to the height of the atmosphere. Would you mind informing me as to its correct height?

When are you going to publish a sequel to "The Lost Martian"? It was a very good story. Don't print too many short stories, because just as you get interested in one, the story is over. The "Moon Conquerors" is one of the best stories I have ever read. When do we get an AIR WONDER QUARTERLY?

GEORGE MAYNARD,
628 Huron Street,
Toronto, Ontario Canada.

(The atmosphere forms an envelope over the Earth, which is believed to be between 200 and 500 miles thick. It is naturally densest at the sea level, and becomes gradually more rarified upwards. At a height of 3½ miles, it is only about half as dense as at the surface, and at 9 miles, only a quarter. Hence the difficulty of breathing experienced by climbers of lofty mountains [such as Mount Everest] and aviators who attempt to break altitude records. The question of an AIR WONDER QUARTERLY is becoming acute judging from the number of readers who ask us when it will be published. There are many mechanical problems to be considered in publishing a new magazine, however and the time has not yet come when we can make any announcement. In the meantime, opinions on an addition to our group are always welcome.—*Editor.*)

Editor, Aviation Forum:

Is it true that a German inventor has created a rocket that will fly outside the earth's atmosphere? How far has rocket flying developed in Germany? I read so many conflicting reports that I would be very much obliged if you will print a brief review of experiments that have been made. Another question. What is the most popular fuel for rocket-ships? What size are the rockets that have been built today? I thank you in advance for your reply.

WILLIAM HILL JR.,
Seven Oaks Post Office,
Victoria, B. C.

(No, but the question of building a rocket that can penetrate into outer space, and possibly to the moon, is holding the attention of scientists. With Prof. Hermann Oberth, Max Valier and Fritz von Opel experimenting with the possibilities of the rocket, much is expected to develop. Professor Oberth, who has been working on the rocket principle for many years, is now having his experiments financed by the UFA Film Company of Germany. This company, which has made many pictures of future scientific accomplishments, is now making one called "The Girl in the Moon"; and the girl uses a rocket ship developed by Professor Oberth. The professor, however, is cautious in making statements about his pet; he calls the moon rocket still a "dream," being apparently content to build a ship that can attain an altitude of thirty miles, and have it return to a designated spot. The first tests of his development are expected to be made on the North Sea coast in the near future.

His present experimental rocket releases itself automatically from a mortar, and has attached a parachute which unfolds to allow the rocket to descend slowly to earth. As with other experiments, it is the fuel problem that is causing most concern. The liquid fuels seems to be gaining favor; liquid oxygen combined with benzine, alcohol and other energy producing agencies. The rocket is 35 feet long and about 4 inches in diameter. The liquid fuel, when brought in contact with some galvanized carbon, consumes it and produces a gas which is expelled at the rate of 1,500 meters a second, the reaction to this propelling the rocket upward.

Space Flying Problems

Editor, Aviation Forum:

I am an ardent reader of SCIENCE WONDER STORIES and AIR WONDER STORIES. In reading "Science Questions and Answers" I have noted several articles on space flying by the rocket method. I wish you would answer these questions.

1 After the rocket leaves the Earth's atmosphere what is there present to support combustion?

2 If, after the rocket leaves the Earth's atmosphere and the propulsion tubes cease to function, would the inertia be sufficient to carry it beyond the pull of gravity or to the moon?

3. If there is no air on the moon how would the rocket be guided so that it would not fall on the moon?

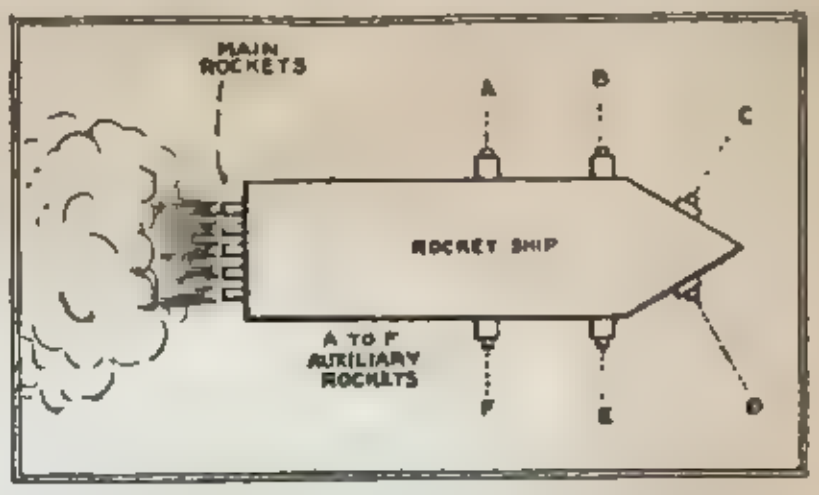
EUGENE LANHAM
3542 College Avenue,
Kansas City, Mo.

(Taking your questions in order, the solutions to these problems of space flying are as follows.

1. A rocket would carry its own materials for combustion. The propellant explosive in a rocket consists of chemicals containing both oxygen and the substance with which it combines to form a gas. The ordinary black gunpowder, for example, supplies its own oxygen in the form of potassium nitrate, and does not depend upon atmospheric oxygen for combustion. When the temperature of any portion of a charge of gunpowder is raised to ignition point, [which is done by means of a match, a fuse, etc.] the oxygen stored in the potassium salt combines with the carbon [which is represented by charcoal] and sulphur thus creating large quantities of hot gases chiefly carbon di-oxide, sulphur di-oxide, and the mono-oxides of both elements. The de-compression of these gases forms the explosion, and, in the case of a rocket, the propulsive force. As the gases escape from the tail end of the rocket, the recoil projects the rocket-ship forward. Describing this in chemical terms, we say that the potassium nitrate releases its oxygen atoms which combine with carbon, [two atoms of oxygen to one of carbon] thus forming one molecule of carbon di-oxide.

2. As the Earth exerts an influence on the moon, and even the moon exerts a powerful influence on the Earth, [as is demonstrated by the tides of the sea,] it is obvious that there is no such phenomenon as being "beyond the pull of gravity." We take it that our correspondent is asking us whether the speed of the rocket would be sufficient to carry the rocket to the moon after the propulsion tubes had ceased to function. This would naturally depend upon the speed of the rocket at that moment. If it was traveling at about 7 miles a second it could forever escape the gravitational attraction of the Earth.

3 If the moon were devoid of atmosphere, the rocket-ship could be guided by the firing of small auxiliary rockets projecting at various angles, as we illustrate in the accompanying diagram.—*Editor.*)



How a rocket-ship can be controlled in space. The small auxiliary rockets change the direction of flight by the force of their recoil when ignited.

THE READER AIRS HIS VIEWS

In this department we shall publish every month your opinions. After all, this is your magazine and it is edited for you. If we fall down on the choice of our stories, or if the editorial board slips up occasionally, it is up to you to voice your opinion. It makes no difference whether your letter is complimentary, critical, or whether it contains a good old-fashioned brick-bat.

All of your letters, as much as space will allow, will be published here for the benefit of all. Due to the large volume of mail, we cannot answer in this department are answered individually unless 10c in stamps to cover time and postage is remitted.

Are New Inventions Coming Soon?

Editor, AIR WONDER STORIES:

I like a new issue of the Air Wonder Stories but what stories I have read, I surely enjoyed, as well as Mr. [illegible]'s Flying Legion. I say that because his later pieces do not come up to my ideas of what the world will be like in 1975, or whatever the date is. I am sure we shall have many inventions then he states, and will owe all the wonders of his grand air liners long before that time. The story is quite interesting but the Commander is not my idea [illegible] of man.

I voted "Space" and the "Red Ace" the best stories I have read, and the "Vanishing Fleet" comes second. I should like to know how many of your readers agree with me.

I feel that the more your writers use their imagination the better, especially when they develop their descriptions in a scientific way.

CHARLES M[illegible]
1023 [illegible] Street,
Clarendon, Ala.

(Mr. Green evidently deserves to check up his opinions against those of other readers. In regard to his ideas about the imminence of new scientific developments and inventions, we are inclined to think that the next fifty years will see a greater progress than during the past fifty or hundred years, and that in an incredibly short space of time, we will actually experience the marvels described by our authors. But this is a matter of opinion, and here we are ever enthusiastic to get opinions.—*Editor.*)

Wants More Magazines

Editor, AIR WONDER STORIES:

I subscribe regularly to eleven magazines, of which Air Wonder Stories is one; and I have still money enough to buy two more. These are: Air Wonder Quarterly and Interplanetary Stories. When will you publish these two books? I am sure they will be eagerly welcomed by your readers.

I see that you have cut down on the nonfiction material, and added a few more pages of stories. Keep this up. It is fiction that we want, good stories, not merely news, which we can get from the newspapers.

I liked "Prince of the Earth Gained" by Edmond Hamilton because it was different from [illegible]. The last installment of "The Flying Legion" was great. I hope you will publish more stories by George Allen England—tales of the future. I also like war stories of the future. I [illegible] a long novel of that type. I would like to see pictures of Mr. Gernsback and Paul on the editorial page each month.

Are there books that tell you how to write stories? If so, will you please name one or two.

JACK DARROW,
4225 S. Spalding Ave.,
Chicago, Ill.

(The best way to learn to write stories, is to write. Just practise writing them, and then compare the ones that you have written with ones you see published in magazines, and try to note if yours lack something that the others have. When writing stories remember to use double spacing on your typewriter, and leave a wide margin to one side. There are a host of books on writing stories, but we rather think that the new author will do better to "just practise," than to read books on "How to Write." Such books can only help you AFTER you have attained a certain proficiency. We are giving Mr. Darrow's suggestion about having more magazines our earnest consideration.—*Editor.*)

Another Boost for 'Ed.'

Editor, AIR WONDER STORIES:

Mr. Hamilton deserves credit for his story "The Space Visitors." That's the type of story I call different, but I don't know how it got into Air Wonder Stories as it makes no mention of airplanes, dirigibles, and such things as belong in an aviation magazine.

"The Flying [illegible]" is a great story and Mr. England evidently has the stuff. I think I am only voicing the wishes of the majority of your readers when I ask when you are going to publish an Air Wonder Quarterly. Here's hoping that we get one soon.

FOREST [illegible] ACKERMAN,
[illegible] Ave.,
San [illegible], Calif.

(Surely Mr. Ackerman must have read that the gigantic shovel in the "Space Visitors" [illegible] a space ship in which that shovel was operated. Interplanetary transportation is unknown as this present story, and the "Space Visitors" were used in that connection to make up the story although we will admit that it is a bit [illegible]. Our author dealt more with the effects rather than the [illegible] of [illegible]. It was another world, but nevertheless, his story certainly is classified as an Air Wonder type.

Edmond Hamilton's story seems to have received universal commendation. More letters have poured into this office praising his originality than we have received about any story for a long time. Those who liked "The Space Visitors" will do well to read this popular author's stories in our sister magazine Scientific Detective Monthly. Here, Mr. Hamilton has branched out and created a series of scientific stories that are astonishingly new—we might almost say, revolutionary. Edmond Hamilton fans will be surprised to see what their favorite author can do.

As for the Air Wonder Quarterly, we shall get this when we are mechanically able to do so. The publishing of four magazines with the huge circulation of Air Wonder, is in itself, a stupendous task, necessitating an organization not always appreciated by the actual reader.—*Editor.*)

What About Air Science Club?

Editor, AIR WONDER STORIES:

In the March issue I have just read two different criticisms of George A. England's story, "The Flying Legion."

I agree with Mr. Euler of New York City that it is one of the best adventure stories yet published. As for Mr. McDowell, he lives in [illegible] but they [illegible] material of which [illegible] should [illegible] understand human nature.

"Eds Big Three," meaning Ed Earl Repp, Ed. E. Chappelow and Ed. Hamilton, are the best authors you have, altho' MacKay and Gleason are not being lost sight of.

I would be glad to correspond with anyone in an Air Science Club.

ED. F. SCHMIDT,
Pudsey Road, R.F.D., No. [illegible],
Verona, [illegible].

(Some famous people have said that the small town is the place in which one gets closest to human nature. We feel sure that Mr. Schmidt's statement will meet with many denials from our readers. But the idea of an Air Science Club is quite interesting; in fact it should be very popular, providing it got off to a good start. Those who agree with this view might be glad to write Mr. Schmidt direct, or through the columns of this magazine.—*Editor.*)

Novelty or Repetition

Editor, AIR WONDER STORIES:

I first became familiar with science fiction in November, 1929. When Air Wonder Stories appeared, I subscribed to them immediately.

In my opinion, Science Wonder Stories is better than Air Wonder Stories because in the latter there is too much repetition. That is, most stories center around some super-scientific criminal who is trying to conquer the world.

Please have more of Edmond Hamilton. His stories, too, are usually repetitious, but they are nevertheless enjoyable.

HENRY G. HOERNLEIN, JR.,
1504 E. Madison Street,
Baltimore, Md.

(That our correspondent still enjoys Edmond Hamilton's stories, even though they appear to him repetitious, seems to indicate that you cannot have too much of a good thing; in other words, that it is better for the magazine to keep on printing a type of story that has proved popular, than to change to a new type, possibly by a new author.

What about this, Air Wonder readers? Would you rather we kept to our usual type of fiction, or try out some new authors, and new kinds of stories? They may be better, or perhaps they may not be so good.

Incidentally, if Mr. Hoernlein doubts that Edmond Hamilton can write unique stories, let him buy a copy of Scientific [illegible] Monthly for April or May. This popular detective [illegible] has written a few stories in both issues of our sister magazine, one of which is [illegible] several others. Edmond Hamilton fans will be astounded when they read *The Invisible Master*," or "*Murder to the Chime.*"—*Editor.*)

A Review of the April Issue

Editor, AIR WONDER STORIES:

Just finished the April issue of Air Wonder Stories and would say it is the best yet. The stories are unsurpassed for their type. I have [illegible] criticism to make.

"Through the Meteors" was a great story and I enjoyed it [illegible].

"The Red Ray" was pretty fair, but not as good as the others.

"The Flying Mars Spy" was the only story I did not like. It seemed to bore my interest, although I can [illegible] reason for this.

Prince of the Earth Gained" was the second best story in the issue. I think it would be well to print one interplanetary story in each issue as a contrast to the atmosphere novelettes.

"The Mystery Magnet" was fair but did not have much plot. Now comes the big prize. The best part of "The Flying Legion" was the last. I can read the author's mind in this story and [illegible] how he may [illegible] the story. I am writing a sequel to it, which I hope he finds [illegible].

ALBERT [illegible]
518 [illegible] Ave.,
Des Moines, Iowa.

(Many readers have praised the last installment of "The Flying Legion." It seems to be generally accepted that the author was rushed [illegible] in the last part of the story. Not whether there will be a sequel or not, we are sure it will be [illegible].

"Through the Meteors" is another story which has received general commendation, as our correspondent's opinions and literary taste seem to coincide with the majority.—*Editor.*)

The Red Ace

Editor, AIR WONDER STORIES:

I have been reading Air Wonder Stories for some time and found in every one of them [illegible] stories.

I enjoyed very much "The Vanishing Fleet" by Neely. I did have thought it to a little out of the ordinary.

"The Red Ace" by Eugene George Key is positively the BEST Air story I ever read. It is futuristic in a way but not impossible. I shall be glad to read more of the Wonder Golden-ray Tube Co., for I hope they will not be content with tracing the "Curses of the Mummy" to his headquarters.

M. L. SWALWELL,
1533 Santa Monica Blvd.,
Hollywood, California.

(Many readers have complimented "The Red Ace" by Eugene George Key. We hope to have another story by this popular author which will appear in an early issue.—*Editor.*)

Constructive Advice

Editor AIR WONDER STORIES:

I am an ardent reader of your several publications, and must therefore, in general, approve of the stories found therein. I do not believe in carping criticism, and in the criticisms I have [illegible] there is no desire to rant about upon your magazines. I offer them rather as constructive criticisms.

I do not care how far your writers roam into the realms of fancy and the unknown. When, however, they are writing in the realm of the unknown they should hold strictly to [illegible] accuracy. They should be alert for any [illegible].

In the March number of Air Wonder Stories, Mr Hamilton in his "Space Visitors" makes a very stupid error when he causes his

(Continued on page 1046)

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AVIATION NEWS

Unknown Mayan Cities Revealed in Lindbergh Flights

IN two days of flying over unmapped areas of Mexico, Guatemala, and British Honduras, Col. and Mrs. Charles Lindbergh and scientists from the Carnegie Institution of Washington have carried on archaeological reconnaissance that, if it could be done on the ground, would require eight years of mule-back travel. Using a large hydroplane in which Col. Lindbergh had been pioneering the new international routes of the Pan-American Airways, many miles of bush and dense jungle were searched from the air for signs of ruins of Mayan cities, hitherto unknown to science.

Five discoveries of new Maya ruins rewarded the exploring parties aboard the Lindbergh plane. Five white columns of crumbling Maya masonry were sighted near Tical, Guatemala, on a flight into the unexplored area near Uaxactun, the earliest of Mayan cities and one that the Carnegie archaeologists have studied extensively. This was the first finding of ruins that seem to be previously uncharted and undiscovered.

Speed of Light is Universe's Yardstick

THIS statement by Professor Einstein, reported by George Sylvester Viereck in the *New York American*, may offer average individuals some conception of what Einstein means by his constant reference to the "fourth dimension"—time. "It is impossible for the physicist to apply definite standards of measurement to space without fixing their relation to a definite point in time."

In somewhat the same manner, the great scientist disposes of man's place in the universe. So far as time is concerned, man is a negligible quantity; his existence is a fraction of a second; and as for immortality—personal immortality—Einstein simply does not believe in it. Speaking of the soul, he compares mankind to a tree with many sprouts. "It does not seem to me that every sprout and every branch possesses an individual soul."

New Television Devices to Appear

TELEVISION receiving sets, almost entirely new in construction, will be required shortly, according to D. E. Replogle, Chairman of the television committee of the Radio Manufacturers' Association.

"Television will require distinct and new receivers, separate from the radio broadcast receiver," he said; "This is assured from the progress being made in the laboratory. At least three more television broadcast stations are being planned for this winter. Transmitting to date is frankly experimental."

The next step, he believes will probably be the photographing of outdoor scenes and by means of a quick-developing film transmitter these will be put very quickly on the air. Several methods of doing this are now in process of completion, and give good promise of success.

Following this the next step seems to Mr. Replogle to be, logically, the broadcasting of events as they occur, directly through a suitably-designed transmitter.

Biggest Land Plane Completed

A NEW Junkers' land plane, largest of its type in the world, is soon to fly. The super-Junkers is an all-metal machine, with cabins stretching to its wings, and enough room even in the wing tips for a man to stand erect. The span over all is 145 feet, the length 75 feet, and the height 16 feet. Motored with a total of 2400 horsepower, the plane will carry 40 passengers in its luxurious cabins. It is an improvement as far as interior appointments are concerned, over the great *DO-X*.

"Blind" Fliers Travel in Circles

LIKE men lost in blizzards or wandering in deserts, pilots who fly blindfold are apt to travel in circles. This has been determined in a series of tests carried out by the National Advisory Committee for Aeronautics. Every pilot tested blindfold failed to maintain a straight course for any appreciable time; and each soon brought the plane into a banked turn which ended in a diving spiral.

The flights prove that some means of visual references must be provided, either by the hori-

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AVIATION NEWS

(Continued from page 1042)

pon, by the reflection of the sun or moon while in dense fog or clouds, or by proper instrumental equipment. They prove also that muscular balance is faulty without the assistance of sight.

Zeppelin Polar Trip Cancelled

THE polar flight of the *Graf Zeppelin*, which had been scheduled for the spring has been cancelled, because neither the Zeppelin works nor the Aero-Arctic Society has thus far been able to procure acceptable terms for insuring the dirigible on its proposed polar flight. As a result, the Zeppelin works will now direct its attention to other commercial projects; chief among them being a South American flight next spring.

Airplane Safety Requires Less Dependence on Pilot

RATHER than expect airplane pilots to be supermen, who will always function at one-hundred per cent efficiency in an emergency, designers of airplanes must try to improve the construction of their machines to the point where they will be easier to land, will not have a tendency to spin, and have satisfactory "controllability." Such are the conclusions reached by the National Advisory Committee for Aeronautics in its annual report recently made to Congress.

The Department of Commerce made an analysis of air accidents in 1928, and came to the conclusion that in nearly half of the mishaps, the pilot was to blame. Had his judgment been better, or had he not become confused by some untoward set of circumstances, had his "reaction" been better and quicker, the situation would have been met adequately. While this is all true enough, and while medical supervision of pilots, always strict, is likely to become even more stringent, nevertheless, flying should be made safer through the elimination from airplanes of certain undesirable aerodynamic characteristics.

Engineers Find Best Night Landing Surfaces

AN aviator coming to earth through a dark sky can see a landing field covered with whitewashed crushed stone 15 times as well as he can see one paved with asphalt, say the aviation lighting engineers of the General Electric Co. To light both fields equally well, 15 times as much light is required for the asphalt as for the rock. Many surfaces have been tested and given a reflection factor. The stone reflects 75% of the light it receives and the asphalt reflects 5%. For Portland cement the figure is [illegible], for crushed stone, 25; crushed slag, gravel and clay soil, 20; sandy soil, 10 to 12; cinders, 5 to 10; black soil, 3 to 8; and asphalt, 5.

Italian Aviator Sets Two World Records

THE Italian ace, Renato Donati, in the flying Fiat *AS* 1 which has an 85 H.P. Fiat engine, recently broke two world's records. These are the records for distance and duration for tourist machines over a closed circuit. The ace cruised between Ladispoli Ostia and Anzio. The flight lasted 29 hours, 3 minutes and 9 seconds, covered a distance estimated at 2800 kilometers. This record beats the previous mark by about 1200 kilometers. The flyer carried a passenger in his machine.

Chemical Cooling Test Pleases Army Air Corps

RECENTLY the first Army pursuit plane built to incorporate a high temperature liquid cooling feature was flown some distance in a test. With high temperature cooling liquid, water is entirely eliminated as the cooling medium, ethylene glycol is the substitute fluid circulated through the cooling system. A chemical containing approximately 1% of water this compound has a boiling point of 215 degrees Fahrenheit as against 212 degrees for water, and an initial freezing point of zero degrees. The liquid is in the form of a slush between 100 and 45 degrees Fahrenheit, and does not freeze solid until the latter temperature is reached. The saving in weight effected by the change to this cooling liquid is so great that the performance of airplanes equipped with it promises to be decidedly superior. This is because the amount of ethylene required for cooling is less than an adequate amount of water, and as a result the radiator is considerably reduced in size. The

(Continued on page 1044)

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AVIATION NEWS
(*Continued from page 1043*)

radiator, which is about 35% of the size of the usual water circulation types, is built in a tunnel beneath the fuselage. At a given cruising radius, a 10% saving in fuel can be accomplished.

R-100 Claims Airship Speed Record

THE British dirigible *R 100*, has claimed the world speed record for airships, on the grounds that it achieved a speed of 81.5 miles per hour on a twelve hour test flight in a fog. The best recorded speed of the *Graf Zeppelin* is said to be 80 miles per hour. According to Sir Charles Dennistoun Burney, head of the company which built the airship, the huge craft attained a speed of 11½ miles above the maximum speed specified in the contract, and this brings England within sight of a cruising speed of 90 miles per hour which Sir Charles considers essential for successful commercial operation. It is to be noted that the new speed record was attained when fully 600 H.P. was kept in reserve, and with this added propulsion, a speed of over 85 miles seems quite possible at the present time.

British Prevent Corrosion in Flying Boat

A REVOLUTIONARY advance in the construction of British flying boats is now being made by the substitution of stainless steel plating for the former duralumin sheet up to the water line, and the effect of this change will be that the flying boats will now be practically indestructible by corrosion. They will have a longer hull life than a ship, without the continual repainting that marine vessels require. In the past duralumin sheet has been used exclusively, as this alloy is easily worked and it has been a simple matter to beat it into the required curves. Duralumin, however, is prone to sea water corrosion, and while great advances have been made in prolonging its water life, flying boat builders have tried for many years to use stainless steel. Older stainless steels were not impervious to sea water, but the present alloy—a nickel chromium steel—is quite what is desired.

Seek "Acoustic Altimeter" for Airplanes

LEO P. DELASSO, who has worked out several devices for use in aviation, is at work upon the source of a sound which will filter through noises aboard an airplane. This will be used in a precision altimeter, which will measure height by the time it takes a sound to travel to the ground and echo back to the airplane. One of the chief difficulties is the multiplicity of sound aboard an airplane. It was necessary to find a tone entirely different from any of those in an aircraft which was done. Now the task is to find the source of a sound which will be of sufficient pitch and intensity to actuate the recording device. An "acoustic altimeter" would be of great value in aviation because it would permit pilots caught in fogs over unfamiliar territory to know exactly how high they were.

Guides Dirigible While Suspended Below It

EXPERIMENTS have been carried out on dirigibles at Wright Field, Ohio, and Langley Field, Virginia, which show that the airships can be directed by an observer hanging far below the craft in a "sub-cloud observation car." Use of the observation car permits the dirigible to fly in or above the clouds, where it is hidden from observers on the ground while the observer in the car, suspended below the clouds by a cable, directs the flight of the ship. The cable contains a telephone core by means of which communication is maintained. This arrangement will be used in the future, if necessary for bombing expeditions, but mainly for assisting all types of dirigibles to land in a fog. The rear end of the nacelle, which acts as an automatic rudder, prevents the car from revolving as the ship moves.

Transcontinental Plane Fare Greatly Reduced

THE most drastic cut in air-travel rates thus far has been announced by the Transcontinental Air Lines, which, in conjunction with the Pennsylvania and Santa Fé Railroads, operates a forty-eight hour service between New York and Los Angeles. This new rate is below the usual extra fare and Pullman rates on railroads, so that competition between the two methods of transportation has begun in deadly earnest. The economic results of the fare slash will demonstrate effectively whether or not the public is air-minded. It had been affirmed, before

(*Continued on page 1045*)

AVIATION NEWS

(Continued from page 1044)

the new reduction, that only the high rates prevented a great many people from making use of the unusually speedy transportation offered by air lines but now there is no such excuse, and the success of the experiment will indicate also just how far the United States has advanced in regard to aviation.

The new rate from New York to Los Angeles is $159.92, which is amazingly low in comparison with former tariffs, and which compares favorably with the rates charged by the railroads covering a similar distance. Between cities on the transcontinental route, the rate will be 5c per mile, as against 12c before the change was made. In every department of their services, some of the large transportation companies are making these reductions. Colonel Lindbergh advised the cut in the fares of the T.A.T., with which he is associated.

Radio Picture System Speeds Transmission

BY means of a special application of the principles of multi-telegraphy and telephony, a new method for the facile transmission of pictures by radio is in process of development. R. H. Ranger, design engineer of the Radio Corporation of America, reports the successful conclusion of the experiments leading to the new system.

The principles mentioned will be applied so that two or more channels may be used simultaneously and the result of each clearly brought out by careful filtering in the receiver. "This principle may be applied in another way, two or more channels used one following the other in very rapid succession, that is, every few thousandths of a second, according to the demand placed upon each channel in the transmission of the picture."

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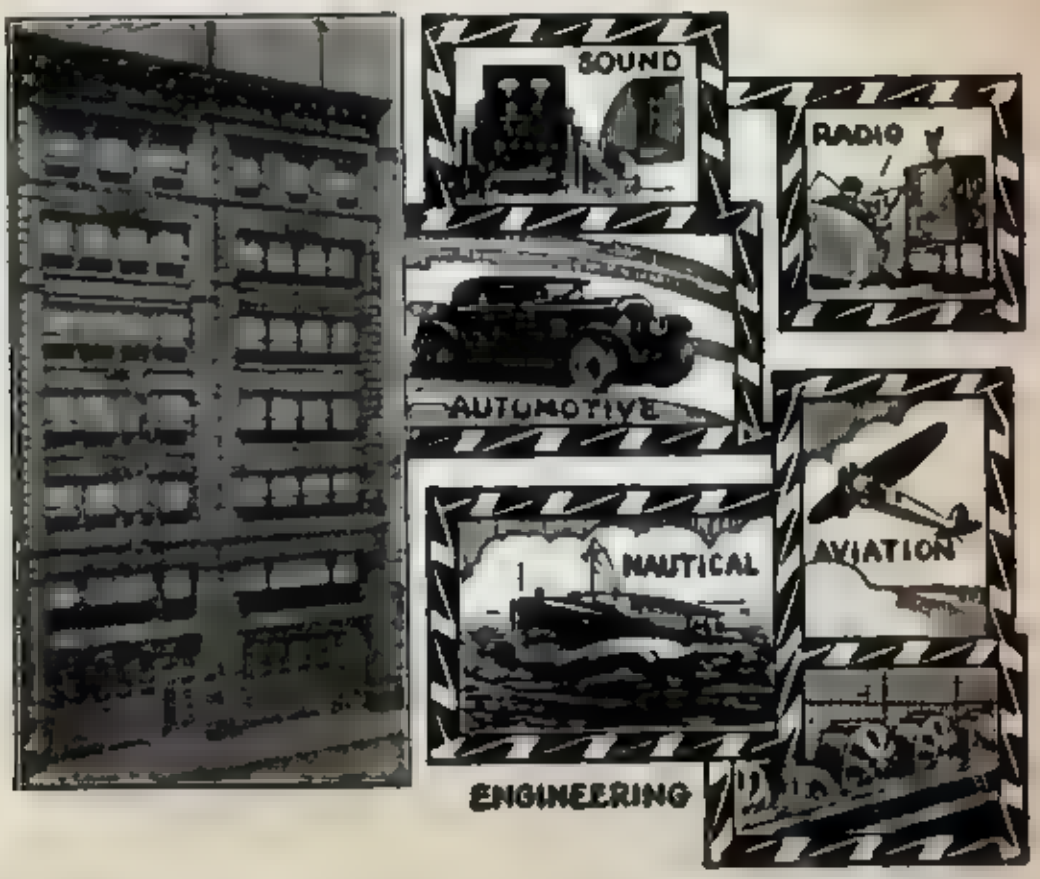

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SEE PAGE 1039
4-30

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GEORGE talking it over with Joe later: "Yes sir! that's the way I'm going to live wherever I'm in Washington. No more 'one room stands' for me. Why it was just like home at the Cavalier—with that nice big suite. That Parlor makes all the difference in the world! Didn't have to meet 'the bunch' in the public rooms. And here's the best part of it, Joe, it doesn't cost any more—six dollars for the whole layout."

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THE READER AIRS HIS VIEWS

(*Continued from page 1041*)

globe of "steelite" to rise to the surface of the atmosphere. By his own figures they would rise only about 3 miles, and hence would be useless. Indeed, they would be dangerous as they would be likely to drift against mountain sides and explode. He should have gone into the realm of fancy and filled the globes with some mysterious gas which would nullify gravity in inverse proportion to the pressure of the air without. When these globes reached a point where the pressure became zero they would automatically stop.

Yours very truly,
ALLEN LATHAM,
Norwichtown, Conn.

(The question that Mr. Latham puts with regard to the error in "The Space Visitors" is more complex than it appears. Mr. Latham assumes that the spheres will come to rest when the spheres displace their volume of rarefied air found at the three mile level. He must remember that when the spheres are first released they acquire a velocity upward due to their buoyancy and might be apt to "over shoot" their natural level greatly. For example a very light body when immersed in water might easily shoot to the surface and fly into the air.

We do not however say that Mr. Latham is incorrect. We would like to receive his calculations so that we may print them for the benefit of our readers—*Editor.*)

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By M. F. Rupert

"The Thought Materializer"
By F. R. Long

"Within the Planet"
By Wesley Arnold

"The Mad Destroyer"
By Fletcher Pratt

Keen Criticism

Editor, AIR WONDER STORIES

It gives me pleasure to compliment you on the improvement noticeable lately in your publications. Especially the cover has improved beyond recognition. As I am a charter member, I of course take an interest in everything pertaining to your magazines. Please keep Paul on the job as he is in a class by himself.

The editor of the aviation forum needs waking up tho. There are several errors in the last number which should not have slipped thru. What's his age anyhow? For instance motored gliders have been in existence for years in Germany. The plane in which von Warthausen flew the best part around the world was such a motorized glider. Then about the speed of a falling body. Tests have been carried out with delayed chute opening and men have fallen more than a mile before opening the chute with the result that it was proven that the maximum falling speed of the human body is in the neighborhood of 20 miles. Then "Flying Freight Train" has tail wheel "a device employed long before the war on the other side." Why publish accounts of harebrained schemes like that New Era Marine Ship development? Anybody who has ever been to sea in a ship will realize how long such a contraption would last. The first three waves would smash it completely.

Another kick England's "The Flying Legion" didn't start bad, but has now deteriorated into the neurotic drivel of an unsatisfied adolescent mind. Then your space flying stories every one of them is based on cheap excitement raised by the introduction of war. As it is self evident that the rulers of the universe would never permit the knowledge necessary to

(*Continued on page 1047*)

THE READER AIRS HIS VIEWS

(Continued from page 1046)

conquer space to get into hands morally unfit to hold them. Please read up on the legends about the flood and Atlantis and about former visitors from space and you may detect a certain law pertaining to the distribution and use of power.

May I add for the peace of mind of timorous souls that a malevolent incursion from space is an impossibility and that benevolent incursions will come as soon as we are morally fit to entertain visitors from space. I wish I had the writing ability as I would like to write a story based on actual conditions on the planets of our solar system.

FREDERICK G. HEHR,
Jerusalem Ave., R.F.D. No. 1,
Hempstead, L. I.

(Mr. Hehr is evidently well informed on aviation matters. In respect to inventions: we must remember that many inventions lie dormant for years before they are developed or put to use. The "fan wheel" in such a one it appeared in various forms in France and Italy long before it entered general usage. Its development was retarded to a great extent by the fact that the wheel acted as a brake on the airplane while taxiing along the ground. With the development of wheel brakes the necessity for a hub was shed and thus the fan wheel became standard and equipment on the modern airplane.

Answering your second criticism, we doubt whether knowledge, for good or evil, can be kept from those unqualified to use it. In fact it seems unfortunately true that many accepted inventions of the past have been delayed by the criminal elements in the community before they came into general usage. Admittedly, the present day problem of restricting the criminal by taking away his weapons is becoming more and more important. This seems to us a matter on which our readers might like to voice their opinions.—*Editor.*)

IF you enjoy AIR WONDER STORIES you must read SCIENCE WONDER STORIES, its sister magazine. In SCIENCE WONDER STORIES you will find all of the good authors who write for AIR WONDER STORIES, and there are many stories that deal with aviation and, particularly, space flying and interplanetarian trips. Be sure to get the May issue now on all newsstands. Table of contents follows:

"The Evening Star"
By Dr. David H. Keller

The conclusion to this marvelous interplanetarian story

"The Infinite Brain"
By John S. Campbell

"The City of the Living Dead"
By Laurance Manning and Fletcher Pratt

"Gulf Stream Gold"
By Ed Earl Repp

And Others

On Overcoming Gravity

Editor, AIR WONDER STORIES

I am very much interested in the discussion of gravitation in the last issue of your magazine and I have no doubt that you will be swamped with letters and questions from readers on this subject. However, since nothing is positively known as to the cause of gravitation, I presume anyone may express himself with safety.

It would seem that no one who expects to continue functioning as a living organism would wish for the annihilation of gravity on any general scale. Nearly every act of his life, if not life itself would be affected by such a happening. Even were a person able to take passage in a space liner which would necessarily be without gravitation after being removed from the earth to any great distance, he would certainly wish to have it restored locally or compensated for in some way in the vehicle itself otherwise he would not know what to do with his limbs or, in fact how to act at all.

However, it seems not altogether impossible that this force may at some time be controlled or harnessed to do work upon the earth. Personally, I cannot conceive of such a thing as (literal) attraction; that is, a force reaching

(Continued on page 1048)

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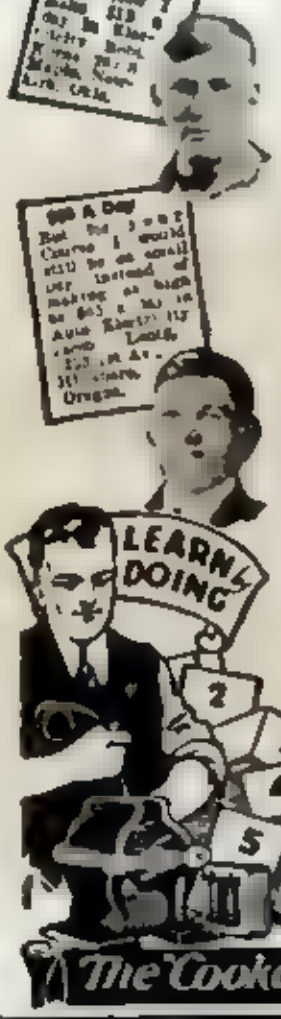

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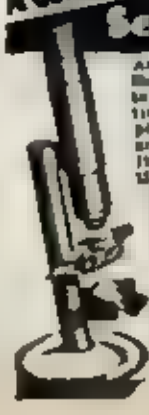

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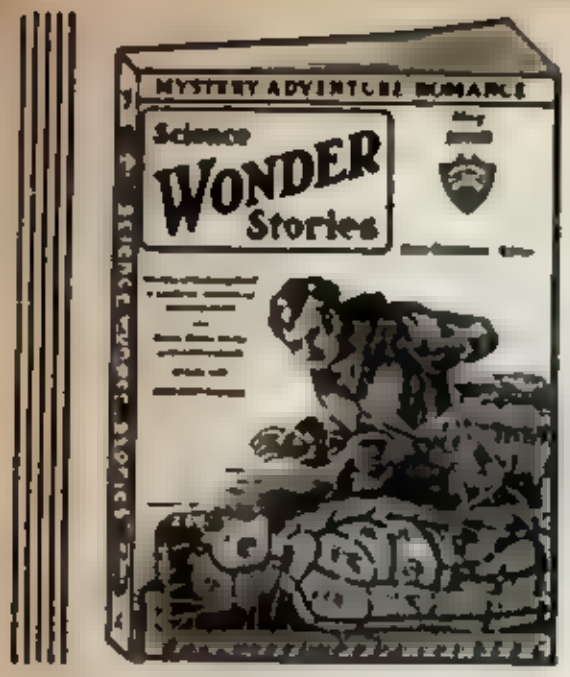

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THE EVENING STAR, by Dr. David H. Keller. We come to the concluding installment of this remarkable sequel to "The [illegible]." If the incidents that Dr. Keller pictures of the strange creatures that his fertile mind has conjured seem to be impossible to us, we can turn to many noted authorities who state that the forms that we may take are almost limitless. Those who have watched the strange career of the [illegible] will find in this installment a culmination that is sudden, breath-taking, and for our human race quite satisfying.

Also **THE INFINITE BRAIN**, by John S. Campbell

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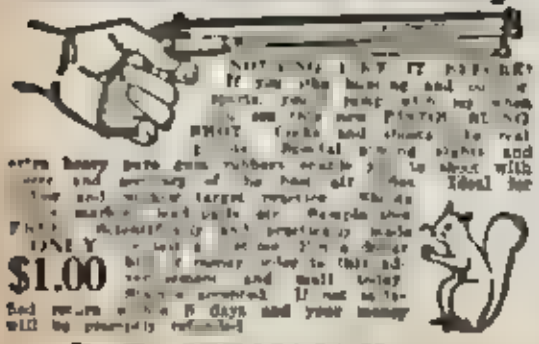

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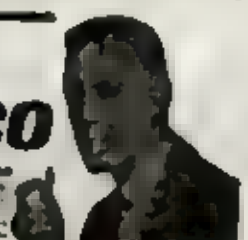

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THE READER AIRS HIS VIEWS

(*Continued from page 1047*)

out from one object across space and "pulling" on another object. While I would be more responsive to believe that gravitation results from a pushing force (as has been suggested by several scientists) or perhaps many forces tending to push solids toward each other. In that case, the screen to look for would not be one that is transparent to the force, but one that stops the radiations, at least in part. Such a screen would properly be placed, not between the objects "attracted" but on the far side of one of them. There may or may not be a substance which is capable of acting in this way, if of sufficient thickness.

Harnessing such a force would not amount to perpetual motion any more than using the wind by means of a wind-mill, or shutting out the sunlight by means of a shade.

Of course, if gravitation is the result of acceleration in a space-time continuum of four dimensions, many of your readers, including myself, will have to give up speculating upon the subject. But it is to be hoped that it is not so terrible a thing as that.

I would be pleased to know whether there are other readers who have somewhat similar ideas on this subject.

R. S. FEATHERSTONE,
Box 192, St. Helena, Calif.

(Of course no one would wish for nullification of gravity on a general scale. It is by gravity that we are able to control our physical actions and most of the mechanical contrivances existing. It is on the force of gravity that our drainage systems depend, our water supply, even our food. In a weightless world, seeds blown from flowering crops and vegetation would not fall to earth, and with the restriction of organic growth the chemical balance of the atmosphere would be upset so that the human race would be wiped out as we should avoid all other dangers co-existent with this state.

Space flying ships, both in the fiction of the past and the actuality of the future, certainly incorporate an artificial gravitational force within their mechanisms. The human body is so constructed, that a sudden nullification of the force of gravity on an individual person would result in immediate death. Our bodies contain a complicated valve system by which our blood is prevented from accumulating in our feet and lower extremities. The regulation and mechanism of the human body is so dependent and adapted to gravitational force as it is to atmospheric pressure.

The theory that gravitation is the result of acceleration in a space-time continuum for four dimensions is unnecessarily obscure. If we regard gravity as the mutual attraction between one mass and another, the strength of which can be calculated by the dimensions of these masses, we have a working principle which will enable us to understand the general conditions space fliers of the future will have to operate under. The moon is smaller than the earth therefore the force of gravity on the surface of the moon is less than that on the surface of the earth. Should there be life on planets larger than the earth the life will be adapted to the stronger gravitational force maintaining on those worlds. This is a simple law, stated in simple terms, and abstruse theories about gravity merely becloud our understanding.

As a matter of fact, this law was laid down by Newton, who, in suggesting that gravity was fundamentally a property of matter, stated the law of universal attraction as follows: "Every particle of matter in the universe attracts every other particle with a force varying directly as the product of their masses and inversely as the square of the distance that separates them." On Newton's law of gravitation was reared the great mathematical structure of Dynamical Astronomy which concerns itself with the exact calculation of a planet's orbit as disturbed by the attractive influences of every other planet or satellite.

We have noticed a tendency in our correspondents to confuse issues by entering into complex theoretical arguments. To make Science a difficult subject to comprehend is a mistake, and an unnecessary mistake. Nearly every scientific law can be simply explained in simple terms, and every fundamental law is intrinsically a simple one. It is primarily the object of this magazine to make Aviation Science simple to the layman who is interested in the developments of the present day, and those of the future. We therefore ask our correspondents to state their ideas in as simple language as possible, so that their letters will be of universal interest to readers of all stages of scientific knowledge.—*Editor*.)

Aviation and War

Editor, AIR WONDER STORIES:

I thank you for the courtesy of printing my rejoinder to Mr. Hart Vincent in the March number. I believe that enough has been said to prove that neither Mr. Vincent nor the Editor intended to cast discredit on Buddhism.

(*Continued on page 1049*)

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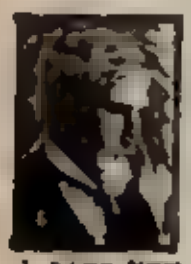

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THE READER AIRS HIS VIEWS

(Continued from page 1049)

mission of extremely valuable information which ignorance without, as the Negro preacher said, so far a dark secret in the U. S. Department of Commerce, to the Aeronautical Chamber of Commerce of America, to the *Illustrierte Zeitung*, and to various and sundry aviation manufacturers and officials; he really would seem better advised to set us right with it than to make sweeping assertions of general "showing wherein."

Of course there are a great many important factors entering into the question of [illegible] defense or offensive bombs the more elaborate of planes and types of planes the nations up to date seem to consist of [illegible] for a few night [illegible] planes can go through a great number of nights in formation under the only an angle through a fleck of bone, as I had occasion to note during the big war practice exercises of [illegible] and the speed with which it can be arrived at [illegible] of "specially trained personnel and all that. But when such factors are considered I believe they will be found to lean to still an even [illegible] in this present year. I stick to my original statement—that had Mitchell's policies received recognition, we should right now have been out [illegible] of dollars apiece for new obsolete planes, which we would have traded for an unguessable quantity of fear and ill will created into the European mind by preparations on our part which Europe could interpret only as warlike.

The said European mind has a curiously logical way of [illegible] that when any nation sets out for superiority in a branch of arms, it must have its eye on something or other definite to be done with that branch. That is why France, which has vigorously seized the European air supremacy, along with a consonant development of other military branches, is now so general an object of suspicion and fear when not actual hatred.

It appears to me to be a moral obligation incumbent upon those who are pushing aviation and profiting or expecting to profit thereby, to use every effort to see that it is not used any more than necessary to further international fear and hatred.

VICTOR ENDERSBY,
1104 Associated Realty Bldg.
Los Angeles, Calif.

(It has been acknowledged for many years that [illegible] strength are not entirely relative [illegible] Where we study the [illegible] of the air forces of the [illegible] we have great difficulty to estimate relative armaments for example though [illegible] to [illegible] United States in the war and owners of the [illegible] since the day built and the numerical strength of her armed forces who may [illegible] have remained [illegible] by increases and varied training of each military unit and by increasing the general efficiency of each weapon, whether it be a battle cruiser or an air plane.

Though it is an open secret that all Europe is, and has been arming for War since 1918, it is a mistake to believe that the United States is the cause of such preparations. Europe is an armed camp, but her enemies are within her own borders. The geographical position and vast boundaries of this country [illegible] with our present mechanism for production of arms or a planes make the possessors of [illegible] a warfare very remote. It is true that in time these geographical [illegible] will be lessened by modern air transportation and here we agree with Mr. Endersby when he says that the air fleet of today is obsolete tomorrow.

We hope our readers [illegible] to express their opinions on a matter on which every citizen [illegible] the [illegible] of [illegible] and build a large fleet of air planes. [illegible] to concentrate our [illegible] research work with a view to [illegible] the [illegible] where necessity arises. Such an opinion from the reader of this magazine will give a general [illegible] of public opinion. The reader [illegible] valuable each reader should submit at least one reason, or argument for his choice. All letters will be indexed and recorded, and the results published in the earliest possible issue.—*Editor.*)

Can Sound Waves Travel Over Light Rays

Editor, SCIENCE WONDER STORIES.

Well you got this letter coming to you, as I've been reading your magazines for years, and this is my first letter. (I noticed in your April issue you wanted them short and snappy).

I have been reading a letter by Ed. Morris regarding placing telescopes end to end, and thus getting a bigger image. This comes close to an idea I have.

I understand that sound waves can travel over light waves, therefore as sound waves can be amplified why not light waves?

Television is supposed to be improving rapidly, could they not direct rays from a telescope into a television set and from the receiving

(Continued on page 1051)

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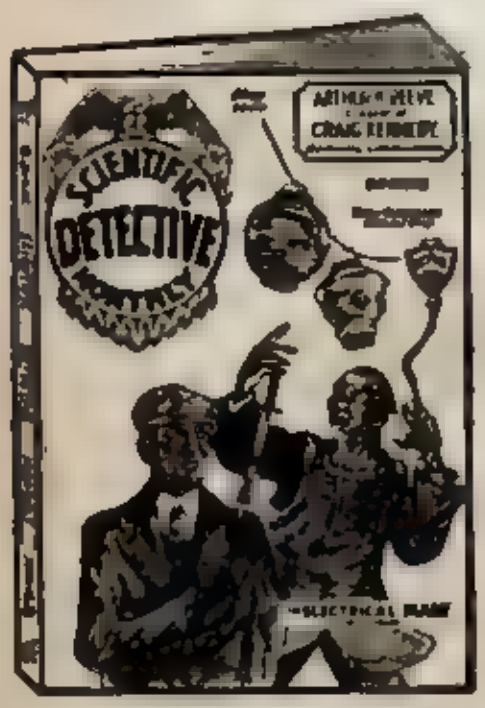

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THE READER AIRS HIS VIEWS

(*Continued from page 1050*)

set magnify it into another sending set and so on, until finally getting a close up view?

Better yet, some one could rig up some kind of a coil to amplify light waves. (I'm applying for the "Professor's job" on Collier's Hour.)

I sent in an idea to the Goodyear Zeppelin Co., a few months before it appeared in Air Wonder Stories.

It concerned an Air tunnel through the center of an airship to make it more stable and more speedy. I thought it would make a partial vacuum in front of the airship. But they kindly rejected it. Can you beat it." (I had not known you had published that same idea before.)

Reading your publication sure fills one's mind with ideas.

You ought to have a slogan for it like "An Idea on Every Page."

Yours sincerely,

BOYD J. HESS,
7445 Schoyer Ave.,
Swissvale, Pa.

(As explained in our February issue, in answer to Mr. Bede, a television image is composed of impulses which may be magnified electrically; but their number may not be added to in order to bring out more details. The same would be found true of the images received by our eyes, if there were any way to amplify them; they are lacking in details below a certain point. If we put a white speck on a dark background, and back away until we can no longer see it, we find a point where the light reflected from it is not enough to produce an effect upon our eyes, though they still receive it. Only a lens or other optical apparatus, which picks up more light than our eyes can, will make the speck again visible at this distance.

No matter how large a train of lenses we use, there is a natural limit to magnifying power; due to the fact that a wave of light is about 1-50,000 of an inch in length, and an object much smaller than this is not capable of affecting the light wave perceptibly. The light which we can see is limited to a very narrow range of wavelengths, probably determined by the size of the molecules in the sensitive background (the *retina*) of our eyes, which is affected chemically.

Theoretically, this light wave is a radio wave, only a very short one—about one two-millionth of a meter long. As the wavelength to which radio apparatus will respond is determined by its size, we leave to Mr. Hess the problem of winding a coil of the size suitable for tuning in the wavelength of light.—Editor.)

BOOK REVIEWS

AVIATION MECHANICS, by H. Winfield Secor. 96 pages, illustrated, varnished paper cover, size 8½" by 11¼". Published by Popular Book Corporation, New York City. Price, $.50.

Aviation Mechanics has been intended primarily as a handbook for amateur aviators and constructors of planes and gliders. The man who is desirous of building his own ship will find this book an indispensable aid. All aeronautical terms used are described fully and each part of the plane is covered adequately in text and illustrations, so that the lay man is enabled to proceed without difficulty. There is an abundance of diagrams and photographs, visualizing each step in the procedure of building an airplane or glider. Several types of ships are covered: a man-carrying glider, a single passenger monoplane, a single passenger sport biplane are among them.

A pilot must know his engine; so the author has devoted a chapter to the modern aircraft engine, with illustrations showing the internal construction and how the various parts function. "Practical Construction Hints" is the title of another chapter; it contains some choice bits of information which every builder will welcome. Nor do we overlook the interesting department, elaborately illustrated, showing all the latest types of airplanes and dirigibles, gliders and balloons. This book is a real how-to-make-it book; it tells and illustrates each step in building an airplane for your own use. The designs given are standard ones and the planes described have actually been built, and successfully flown.

In short, as you must have concluded by now, that we are very enthusiastic about this new book which does well what it set out to do —to tell the reader how to actually build and fly a plane or glider.

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The Bat-Men of Mars

(*Continued from page* 1035)

Alicia leaned forward eagerly, made as though to arise and greet her friends. Fry, his love for her shining in his eyes, reached out his arms to her.

But the scientist was due for a rude awakening. Two powerful Martians, standing beside the carriage, thrust themselves between the girl and her lover. And a heavy scowl settled over the already stern features of the Kor of Osin.

Neither Fry nor Randolph understood the reason for this demonstration. So, as the scientist made another effort to reach the girl, he was amazed and infuriated when, at a sharp order from the personage in the carriage, the two powerful Martians again seized him.

It was now that Henry Randolph went into action, hurling himself upon the two Martians and bearing them to the ground. Others came, and the huge Earth-men fought them off their feet. Together he and Fry soon cleared a space about them. But their enjoyment of it was brief. More Martian guardsmen joined in the struggle which could have but one ending. The Earth-men were overpowered.

There stood between the adventurers and the royal carriage a dozen tall Martian guardsmen, whose attitude toward them, while not threatening, indicated beyond doubt that they should not be permitted to approach the girl. No harm had been done them, but they were given to understand that they were under a taboo with regard to contact with Alicia.

Fry turned to his friend. He had seen no one else in the carriage but Alicia and the Kor of Osin, of whose identity he was, of course, ignorant.

"This looks bad, Randolph!" he cried. "What do you make of it?"

"It is strange," admitted the other, "but there's nothing we can do. Perhaps we'd better wait awhile and see what happens."

As the carriage moved away the scientist turned again—for one fleeting glimpse of the girl he loved. He saw her white, scared face for just a moment and then she was gone. But he called out to her before the guardsmen could silence him.

"Whatever happens, Alicia," he shouted, "we shall be working to aid you. I love you, darling!"

"And I love you, Leonard, with my whole heart!" called Alicia, at which the Kor of Osin bent toward her, scowling his disapproval. He had not understood her words, but it displeased him that this woman from another world should hold speech with any but himself.

The moment the Kor's carriage moved away, the Martians who had piloted the adventurers to the city of Hio made signs that they were to accompany him. There was nothing to do but consent. Besides, as they could not fail to observe, he was openly friendly, perhaps even sympathetic.

Fry wished to re-enter the projectile, but the Martian shook his head at this. He smiled in friendliness, however, as he stepped between him and the craft, while the guardsmen about it tightened their lines.

RESIGNING themselves to their guide because there seemed to be nothing else they could do, they awaited his pleasure. They were joined immediately by another youthful Martian of about the type of the first. Both wore uniforms, and the Earth-men concluded they were acting in some official capacity.

The pilot, easy of manner, introduced his friend, Ken Mahu, who, in turn, after bowing low in acknowledgment, presented by name the pilot who had escorted them

(*Continued on page* 1053)

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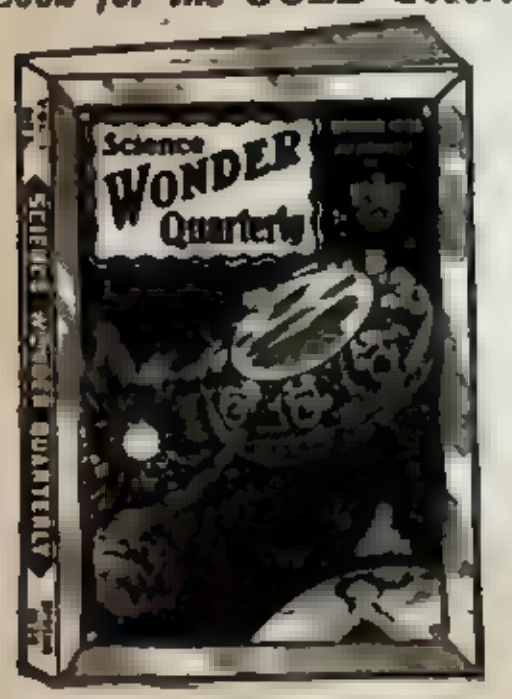

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The Bat-Men of Mars

(Continued from page 1052)

into the city. He was Ken Jari. Thus the four men constituted a group that attracted attention from the populace as they entered a carriage and were driven away.

KEN Jari and Ken Mahu now took their charges to the same institution in which Alicia had been questioned on her arrival. This was the Por Lito, a place of scientific study and learning, a university unlike anything they had ever seen.

In the Por Lito the Earth-men were presented to Horo, the aged scientist who had discovered the amazing fact that Alicia had come from another world. But if Leonard Fry had known that it was Horo who had been responsible for the incident on the landing field and, for Alicia's detention by the Kor of Osin, he could not have accepted the offer of the patriarch's assistance as he did. It was well for the adventurers that they could not yet know that Horo, master of sciences and high priest of Osin, had, in duty to his sovereign, reported the coming of a maiden from another world, and had pointed out to him how it was the fulfilment of a prophecy and tradition that had come down through the ages.

Horo it was who headed the institution of the Por Lito. And it was he who now undertook, in the interest of further scientific discovery, to evolve a method of intelligible communication with the visitors from the Earth, which was known on Mars (or Turmia) as Sjor.* For had not the Kor of Osin ordered the quickest progress in this direction of which Horo and his staff of instructors were capable, and was not the Sjorian maiden already a student at the Por Lito?

Horo accordingly welcomed the Earth-men to the Por Lito, where he now seemed as one transformed, revitalized. His eagerness brightened his eyes and quickened his step. He had lived through many generations, but this experience was the greatest of his lifetime. The prophecy had actually come true—human beings from another world had come to Turmia! It was the greatest day of his long life.

Ken Jari and Ken Mahu, who were flying captains and whose title of "Ken" was the proudest possession of any young Martian, as the Earth-men were to discover, found quarters for the Sjorian visitors in the building itself. But Horo, who had given them brief instructions, could not bring himself to leave the Earth-men, so he joined the group and made certain that his charges were comfortably disposed. The old man lingered there with them for some time, although he could not yet communicate a single thought to these daring adventurers, who, in his opinion, had eclipsed anything ever yet attempted by any man of any planet in all the solar system.

At last, however, Horo bowed himself out of the comfortable quarters in which Keh Jari and Ken Mahu had established the visitors, and the Earth-men were alone.

Randolph looked searchingly at his friend as the Martians left them, and was glad to note that Fry seemed less worried since meeting Horo. He, himself, had also experienced a change in feeling. Both Ken Jari and Ken Mahu, handsome, courteous fellows, had shown marked friendliness, and Horo had been positively enthusiastic over his contact with them.

* The Martians pronounce this with a hissing sound as though they were pronouncing George with an S in front.

(Continued on page 1054)

SWEARING in the BATHROOM

"Singing in the Bathtub" is a very popular song but swearing in the bathroom is probably heard more often. And it's all because too many men are shaving with dull razor blades. Don't scrape your face with a dull blade . . . keep your blades keen edged with the KRISS - KROSS STROPPER . . . the most marvelous shaving aid ever invented and patented. Thousands of men are doing this and using the same blade for months . . . one man shaved one solid year with the same blade.

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We are offering the new KRISS KROSS RAZOR FREE to those who are ready to try prompt in answering this offer. This razor has an instant release frame . . . one press and the blade comes out. Adjustable to three desirable shaving positions. Send the coupon now; get the facts about the FREE RAZOR OFFER.

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We need more representatives at once . . . we haven't room to mention all the good things in the KRISS KROSS line. You can make big money selling this great shaving aid. Many made $40 in one day. Even spare time workers make $10 to $20 a day. Send coupon for more details. Don't hesitate if interested in agency proposition . . . get started at once.

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The Bat-Men of Mars

(*Continued from page 1054*)

drive was concluded and they returned to the Por Lito for dinner.

The meal was served in the apartment to which the visitors had been assigned. Horo and the two flying captains sat with their guests. And, as before, the master of sciences and high priest of Osin continued to teach them, naming various objects such as the dishes served and the utensils employed.

Night approached, and Horo, master Night was approaching, and Horo, master astronomer, led the way to the observatory.

The massive telescope, the largest Dr. Fry had ever seen, attracted his attention at once. But Horo, before permitting him to satisfy his curiosity for a peep into the instrument, called his attention to a planetarium. He followed the same method he had employed with Alicia, indicating Mara, or Turinia, and then the Earth, or Sjor, as they revolved around the sun.

Horo also named the other planets and his pupils inscribed the names in their notebooks as the patriarch nodded his approval. In this way they were obtaining fragments of the Turinian tongue. The language seemed simple. None of the words Horo had used were long, and the language itself was apparently liquid, for no gutturals had yet been heard from Horo or the flying captains.

At last the gigantic telescope engaged their attention. Dr. Fry, himself a famous astronomer and physicist, marveled at the progress made by the Turinians. His respect for Horo, master of sciences and high priest of Osin, deepened as the aged man swung the great telescope over a wide arc of the heavens and identified various constellations.

With the small planetarium at his side, Horo instructed Dr. Fry in his first lesson in Martian astronomy. Indicating the Earth, or Sjor, low near the horizon, he swing the telescope full upon it. The Earth-man gasped at what he saw—a glorious planet, now the "Evening star," shining with remarkable brilliance over a wide area of its surface and with a faint outline of darker regions that he was actually able to identify as the continents.

Dr. Fry called to Randolph.

"Come and see this," he urged. "There is the outline of the western hemisphere of the Earth. One can really identify both continents."

Randolph was no less amazed, although the Martian skill in astronomy held the greater lure for the scientist.

Both men gasped, as Alicia had done, when Ken Jari, at a word from Horo, brought a chart into the observatory on which were shown photographic reproductions of the Earth's surface. Here, indeed, was astronomy in the fullest sense.

Horo, to whom the heavens apparently were as familiar as the city in which he lived, touched the controls of the massive telescope and brought it to bear on various planets. There was no need for identification, so far as Dr. Fry was concerned. He knew them quite as well as did Horo. But he had never seen them to such advantage. The Martian telescope was a marvel.

The evening wore on, and Horo and Dr. Fry, drawn together by the strongest bond men like themselves could ever know, reveled in their silent study of the universe. Galaxies millions of light-years distant were revealed to the wondering visitor. He was now permitted to view things at which in theory he had only guessed.

(*To be continued*)

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No. 8614 Fleroscope. Prepaid **65c**

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Here is a real high power imported microscope for instruction and laboratory work. Has regulation rotating light mirror. Has adjustable lens for correct focusing. With it come 3 specimen slides. Entirely brass. Packed in neat leatherette box. Magnifies about 50 diameters.

No. 8617 Microscope. Prepaid **$1.90**

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This fine folding pocket magnifying glass, also called linen tester, is made entirely of gold lacquer finish brass. Has powerful lens that magnifies everything 10 times. Has fixed focus. Just open it and it is ready. When folded this magnifier occupies a space about as large as a quarter and twice as thick.

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Handsomely carved platinum finish. Looks just like any other ring. But, oh boy, wait till you look through the "VIEW." Strong magnifying glass shows French actress when viewed against light. Ring has large imitation diamond. When ordering enclose a strip of paper giving size of your finger.

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A chest of magical apparatus and directions for performing TWELVE AMAZING MAGICAL FEATS. An entire evening's entertainment can be given with them. Includes the Magic Vanisher, Cigarette Vanisher, Hen Coins, Master Memory, Beads on String, Obedient Ball, Vanishing Watch, and many others. Biggest value ever offered. Worth double the price we ask.

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Real Pistol

Here's a real pistol, yet small enough to be used as a watch charm. Illustration is full size. Imported, best European workmanship. Excellent reproduction of standard pistol. Cut shows pistol broken open to load blank cartridges. When trigger is pulled, cartridge goes off with a loud BANG, that can be heard for a block. Pistol entirely made of steel, nickel plated. Muzzle is beautifully engraved. Octagonal barrel. Comes in box, with cleaning rod and 25 blank cartridges AT NO EXTRA CHARGE. (As explosives are prohibited to go by mail, pistol is sent express collect).

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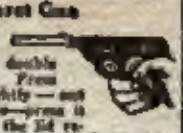

NEW, Actually shoots cigarettes. New improved double action model. Press the trigger lightly — out shoots a cigarette—press it again, back flies the lid revealing it a cigarette case. Looks like a real automatic. Made entirely of metal, with oxidized stocks, barrel and fittings. The same size as the real article, and weighs but 12 ounces.

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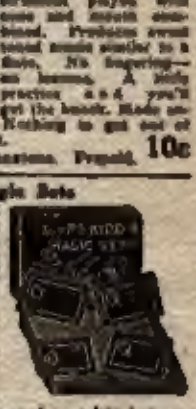
Magic Sets



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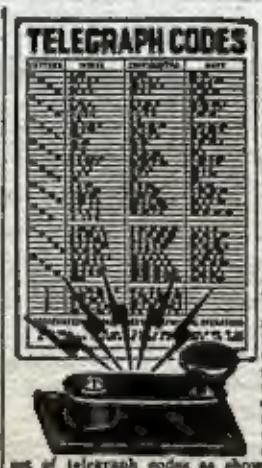

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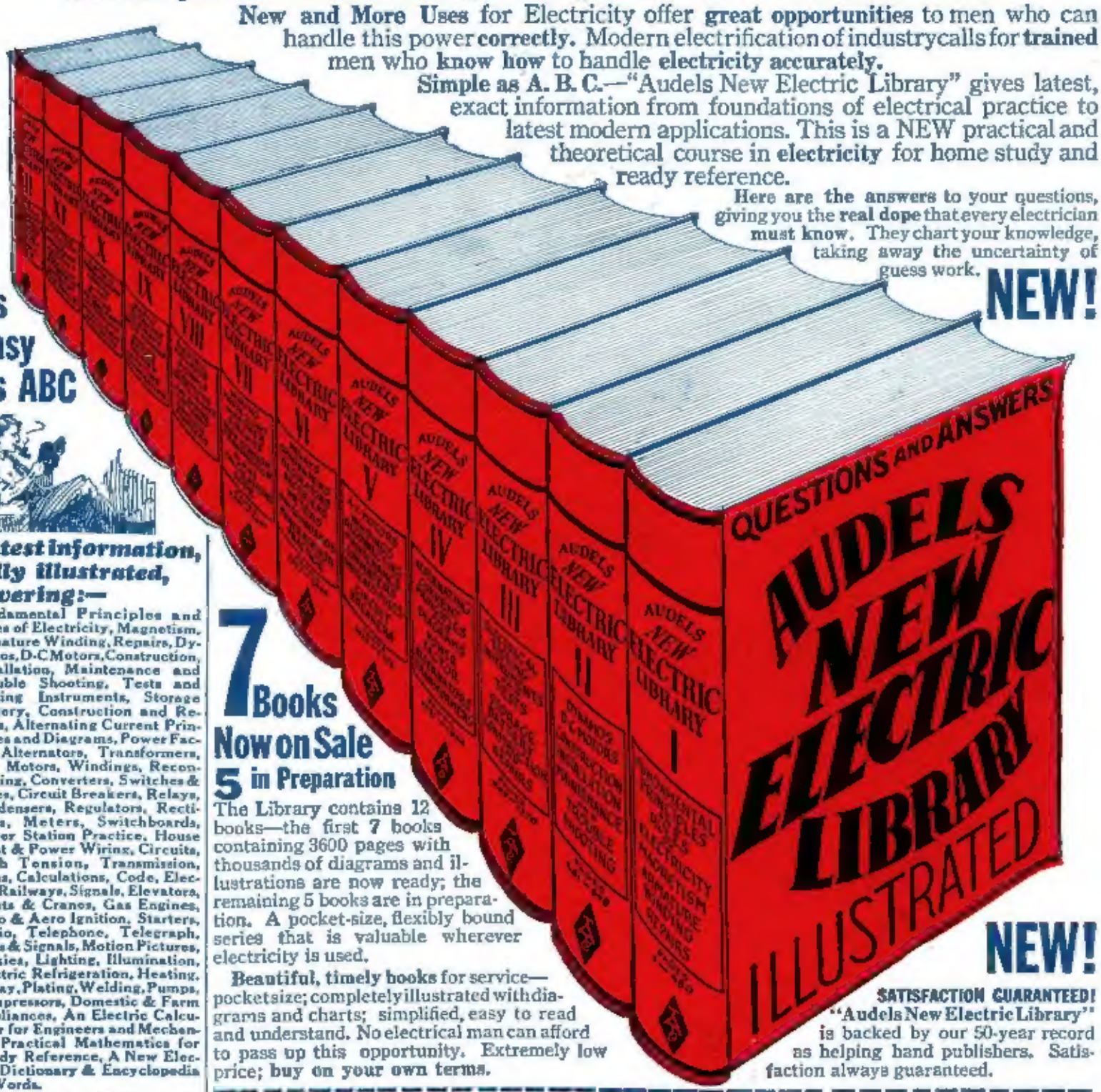

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Half a Million People

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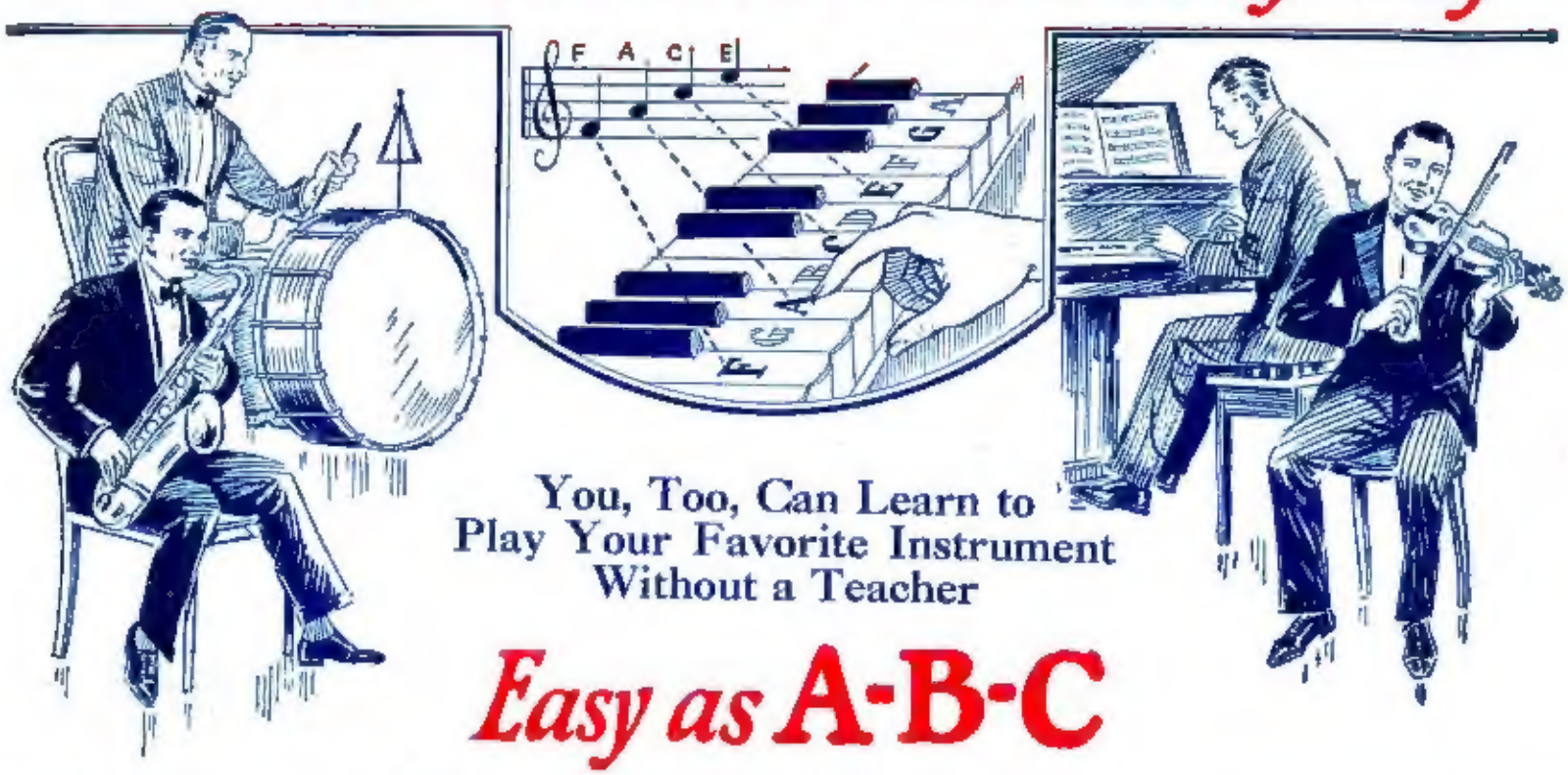

You, Too, Can Learn to Play Your Favorite Instrument Without a Teacher

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It is like a fascinating game. From the very start you are playing *real* tunes perfectly by *note*. You simply can't go wrong, for every step, from beginning to end, is right before your eyes in print and picture. First you are *told* how to do a thing, then a picture *shows* you how, then you do it yourself and *hear* it. And almost before you know it, you are playing your favorite pieces—jazz, ballads, classics. No private teacher could make it clearer. Little theory — plenty of accomplishment. That's why students of the U. S. School of Music get ahead *twice as fast — three times as fast* as those who study old-fashioned plodding methods.

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